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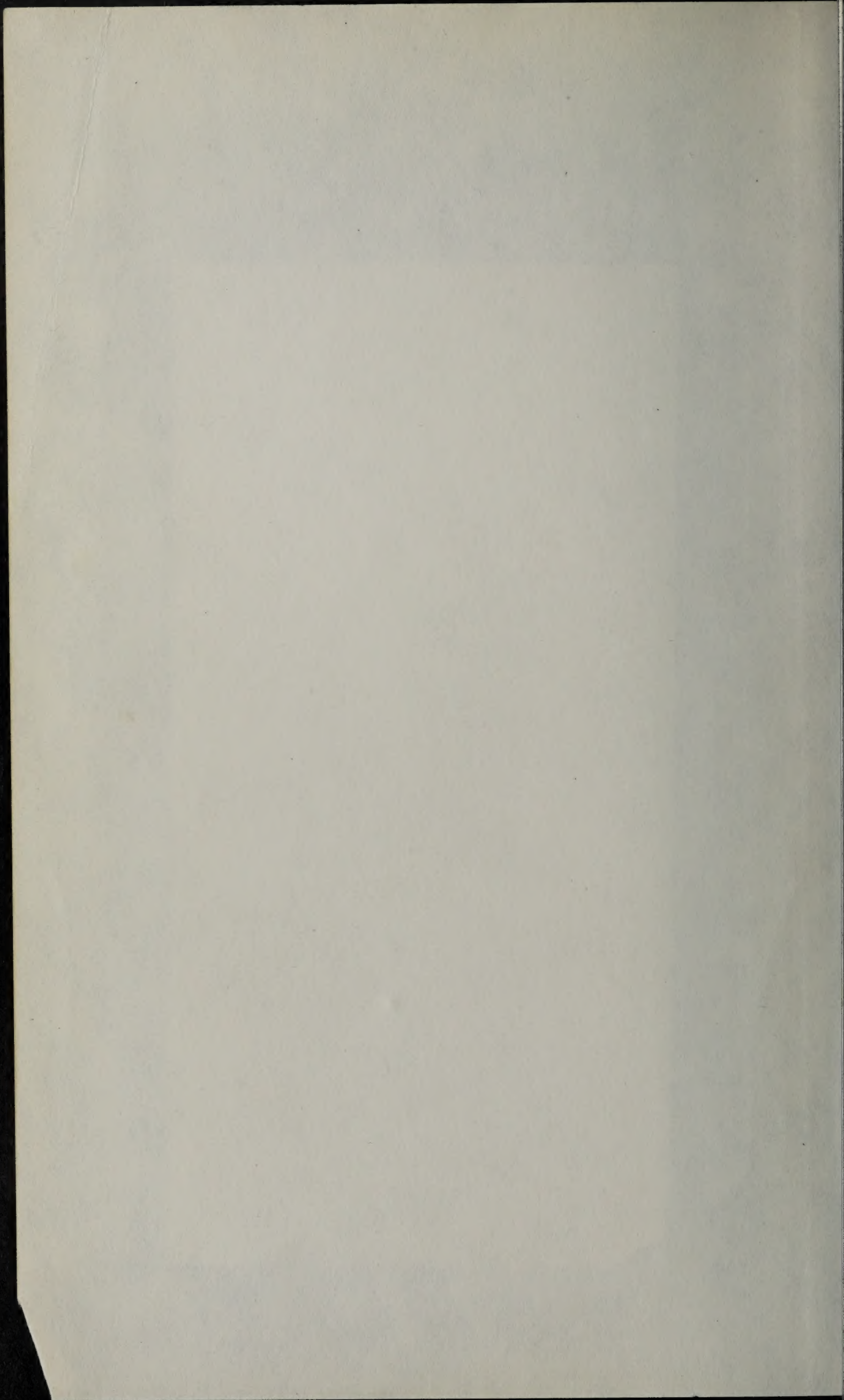
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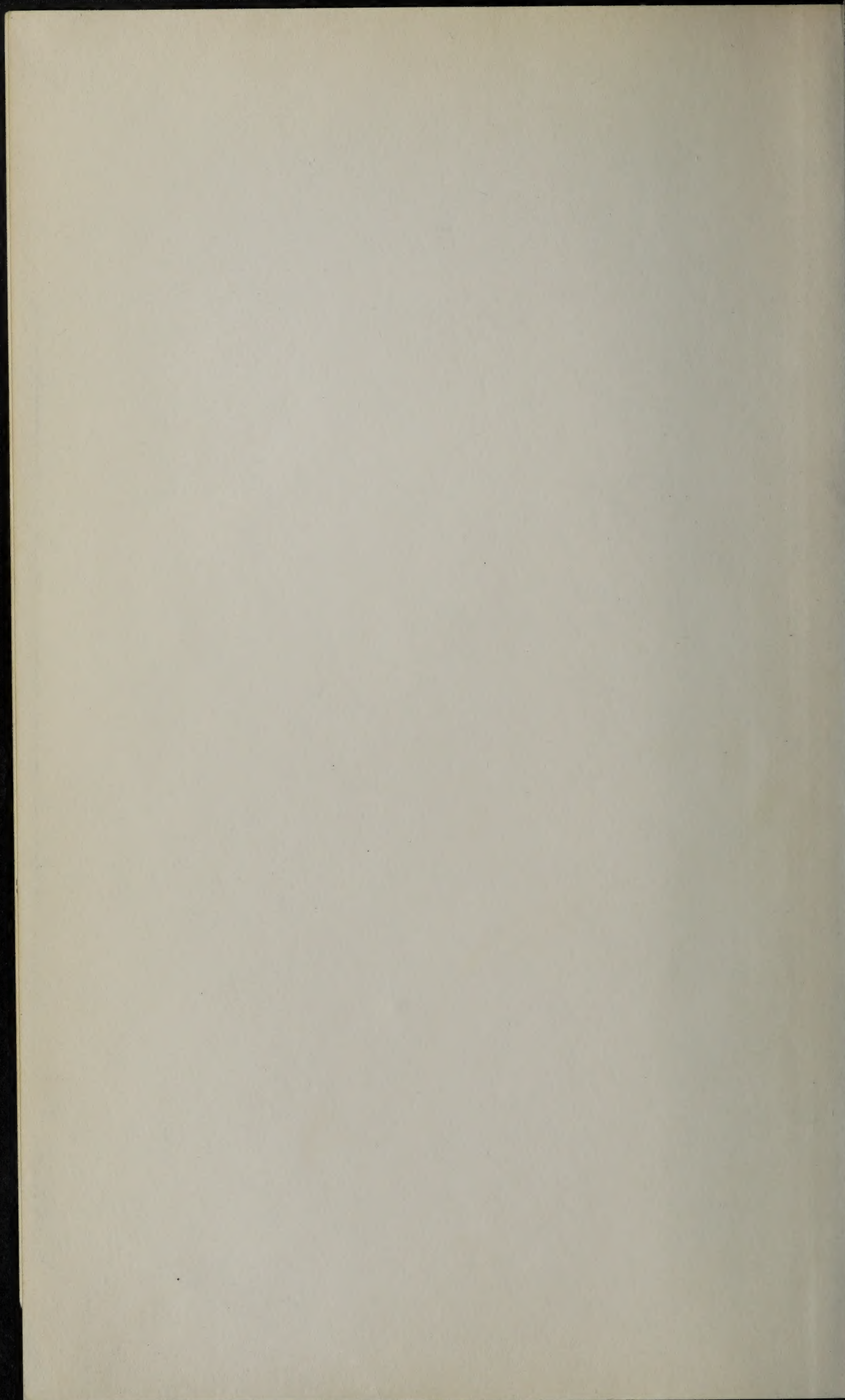
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AMERICA

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PHYLLIS BARCLAY-SMITH, F.Z.S.

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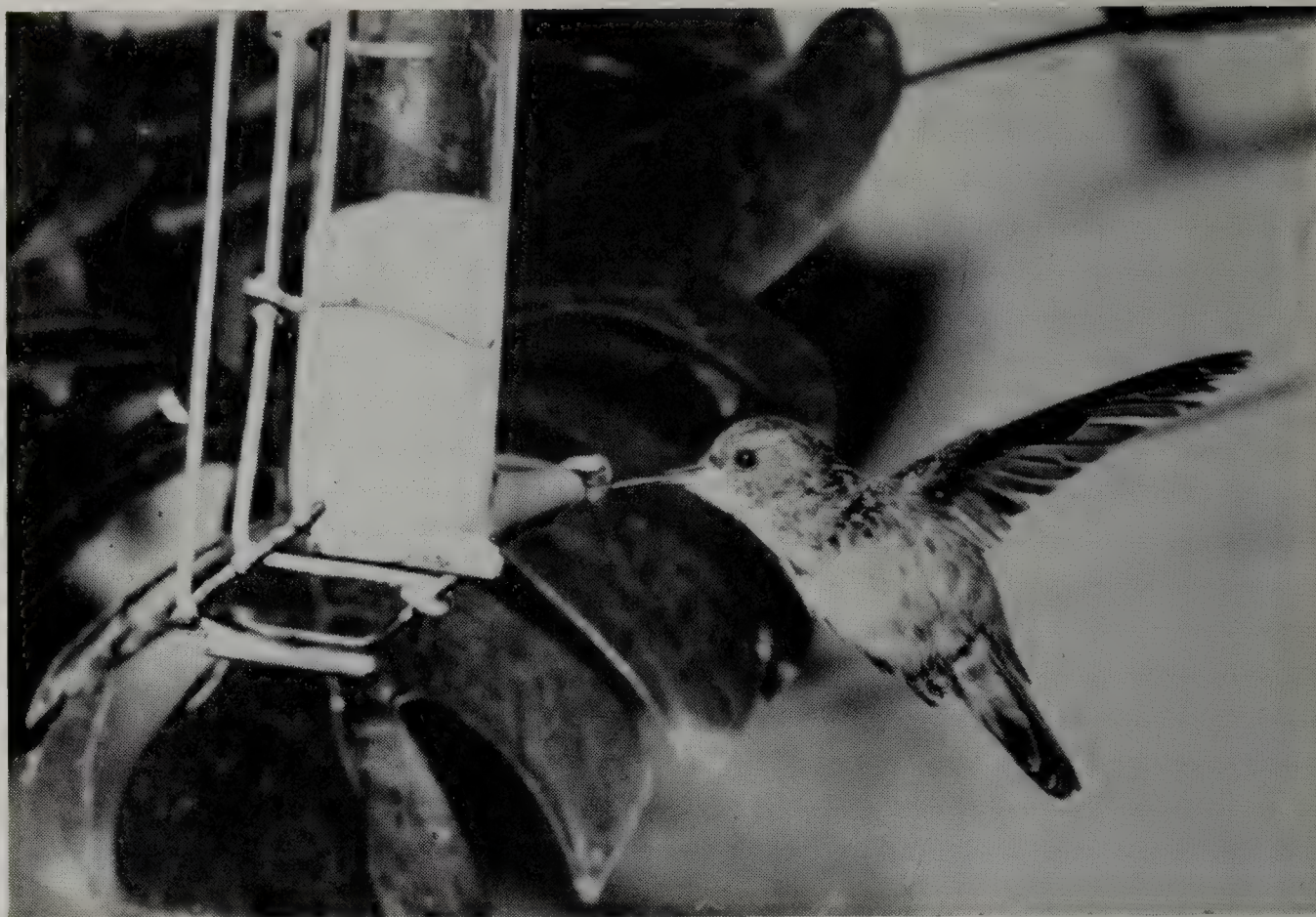
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Female of *Hylocharis cyanea*.



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Male of *Lophornis magnificus*.

[A. Reventlow



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## EXPERIENCE DURING FIFTEEN YEARS WITH THE FEEDING AND MANAGEMENT OF HUMMING BIRDS IN CAPTIVITY

By AXEL REVENTLOW (Managing Director of the Zoological Gardens,  
Copenhagen, Denmark)

Since we got our first Humming Birds in May, 1935, these small birds have been one of our greatest attractions. Many people have come to our Zoo specially to see the Humming Birds, and on busy days one or two keepers constantly have to regulate the stream and to make the crowd move on. This interest has not diminished since the arrival of the first birds, and in this connection I should like to mention that a gentleman from England, who had never before seen live Humming Birds, was so enthusiastic about the birds that he at once cancelled his air passage in order to study them for a whole day.

In our bird-house at present we have a stock of about 700 birds of more than 300 different species, but the Humming Birds still prove the principal attraction. On the 1st August, 1952, we had 40 Humming Birds of eight or nine different kinds.

It is very important that the Humming Birds should be in good condition on arrival. According to my experience, the last consignments to Europe of these birds have not, by far, been of the same good quality or consisting of as many different species as before the war. Then the birds were brought to Europe by clever and experienced men such as Charles Cordier and the German, Dänisch, who generally caught the birds themselves and had time and patience enough to care for and feed them, and to clean the cages properly during the journey from Brazil, a voyage of about 10–12 days by the great passenger liners. The Humming Birds are now coming to Europe by air, and though this means a quicker journey, it involves the great drawback that the crew of the aeroplanes only in very few cases shows the least interest in the welfare of the birds. During the last few years we have several times got collections of Humming Birds



consisting of big and very small ones all mixed together, and consequently the small ones were constantly chased away from the feeding-glasses so that many of them starved to death during the journey. The cages were badly constructed and almost impossible to keep clean. On arrival at our airport late in the evening many of the birds were lying on the bottom of the cage, in a very deplorable state. They were so soiled that they stuck together in their own faeces, and in the food spilled from the feeding-glasses. My wife and I had to wash every single bird several times with cotton-wool in lukewarm water, dry them by means of a heating lamp, and feed them by hand almost the whole night.

Immediately after the arrival of a collection of Humming Birds it is advisable to put them into as many small cages as possible, so that every bird can rest, and drink as much as it needs from the bottles. It is very important to use a great number of feeding-glasses and to place them in the cages a good distance apart. Usually I divide the birds up into at least three different lots according to their size. Every lot is then divided into smaller lots according to their condition. The best specimens are placed together and can, as a rule, get along very well when provided with sufficient light, heat, and food. The next lot, which is weaker, must generally be fed by hand, and the last, including quite exhausted birds and some without wing-feathers which are consequently unable to fly up on the perches, need to be constantly fed by hand. The birds should be taken by the beak and held between the thumb and the third finger of the right hand; the forefinger should be placed on the back of the bird so that its wings are sticking out between the fingers and can be moved when the beak of the bird is put into the spout of a feeding-bottle which is held in the left hand. The beak should not be put too far into the liquid and care must be taken not to spill any of the liquid on the feathers.

It is quite astonishing to observe the vitality of these small creatures, in many cases weighing only  $1\frac{1}{2}$  to 4 grams. Very often I have seen them lying stiff and motionless with closed eyes and expanded wings on the bottom of the travelling boxes, but putting them into my breast or trouser pockets I soon found them beginning to stir the wings and, shortly after having been fed by hand, they sat on the perches or were flying around in the cage as if nothing had happened to them. After the arrival of new birds we generally do not put out the electric light at night for about a week so that they are able to find the feeding-glasses and to drink whenever they like.

At present our Humming Birds are placed in five cages or aviaries, two of them being 145 cm. long, 135 cm. deep, and 180 cm. high. The medium-sized cages are 325 cm. long, 235 cm. deep, and 290 cm. high—and the biggest one is 1,250 cm. long, 500 cm. deep, and 400 cm. high. The Humming Birds are generally put together according to



their size, so that the smallest species are preferably placed in the smallest cages. It is, however, remarkable to note that a number of Mosquito Humming Birds, White-bellied Humming Birds, and Swallow-tailed Humming Birds, the whole summer have got along splendidly in the biggest cage together with Sunbirds, Sugarbirds, Tanagers, and other gaily coloured birds. At the end of this summer, when the Humming Birds from the biggest of the above-mentioned cages had to be removed, the plumage and general condition of these birds were remarkably better in comparison with those from the smaller cages.

All cages are furnished with live plants and flowers. The biggest one, containing also a number of alligators and a little pond is, by means of palms, dracenaes, sansiviera, and other plants, arranged as an artificial tropic scene. The most suitable plants for the small cages are stone-ferns as for instance *Nephrolepis whitmanni*, Begonia, Erica, *Solanum capistratum*, *Cobaea*, and *Monstera deliciosa*, the long soft aerial roots which are excellent as resting places for the Humming Birds. The bottom of the cages is covered with brick-coloured gravel, moss, and grass. The moss and grass have to be renewed rather often lest they should decay in the humid atmosphere and thus foul the air in the cages. All plants are sprayed every day with lukewarm water which is used by the birds for drinking and bathing purposes.

It is wonderful to see the small energetic birds sitting on the green leaves and rubbing the water into their feathers. As the Humming Birds have never been seen sitting on the bottom of the cages, we have fixed some artificial leaves made of green rubber to the plants. These artificial leaves are somewhat the shape of dishes, so they serve both as drinking vessels and bath tubs. The keeper enters the cages several times daily in order to clean the leaves and to give fresh food. If we want to catch any particular Humming Bird we spray it with a syringe until it is soaked with water and falls to the bottom of the cage, when it is easily caught.

It is very important that the temperature of the cages is as constant as possible; it may, however, be a little lower at night. I consider a temperature of 22–24° centigrade as best during the day, and 18–20° centigrade at night. By accident the temperature has sometimes fallen to 13–14° centigrade at night, but the birds have never come to any harm.

The cages have to be supplied with plenty of fresh air. The Humming Birds do not feel comfortable if the air is constantly too moist or too foul, owing to decaying plants or moss. Preferably less heat and more fresh air!

Our Humming Birds cages are heated by electricity, and we use a varying number of stoves according to the outside temperature and the sun: for example, if the sun is shining many hours on the



glass roof of the bird-house, we naturally put out some of the electric stoves. We also have to take into consideration the heat from the lamps alight in the cages. The neon tubes are placed in such a way that the birds are illuminated from above, below, and from the sides. It would be an advantage if the cages could be placed in a rather low place so as to be convenient to the human eye. Having been forced to use some existing cages, we have not yet been able to solve the problem of illumination to our entire satisfaction, but this question will be taken up soon. We have never noticed that the Humming Birds, or their eyes, got damaged by the heat of the lamps or the strong light. They are able to look directly towards the sun without being dazzled. In the very few cases when a Humming Bird has flown against the glass front of the cage, it was being chased by other male birds.

As everybody knows, the Humming Birds are by nature very quarrelsome and unsociable among themselves. I have, for instance, never seen two of them sitting close together as many other small birds often do. Owing to their bright colours we prefer to keep male birds, so it is inevitable that some quarrelling takes place and some of them drive others away from certain feeding bottles which they consider to be their own property. It is well known that Humming Birds in a wild state are birds which energetically and constantly keep others away from their special territory. Every day at certain times they are to be found on the same perches, generally on a bare twig and in an open place. For this reason, we have put a considerable number of bare branches and twigs into our cages, and these are constantly being used by the birds. New Humming Birds always require a certain space of time before choosing their special sleeping places, but after this they can be found every night at the same place. The newcomers are usually chased by the old ones; these are generally stronger than the others and are usually flying better. We therefore temporarily remove the most pugnacious of the old birds until the new ones become acquainted with the cages and the feeding-bottles.

During the dark season we constantly have the artificial light burning in the cages of the Humming Birds. In the evening most of the lamps are put out and only a few below the ceiling remain burning for a short time, and these are then gradually put out in the course of 10-15 minutes by means of a special dimming switch made for this purpose. Before total darkness sets in, we count the birds through the outer pane of glass. If any of them still prove to be restless, we must wait and put out the last light, when all are sitting quietly at their sleeping places. Usually the Humming Birds fall asleep very quickly, and when healthy they sit in a very characteristic attitude with the wings pressed very close to the body which is practically resting on the



twig, with the beak pointing upwards in an angle of about  $45^{\circ}$ . When sick or exhausted a Humming Bird will put its beak more or less vertically in the air during the sleep, i.e. that means considerably more than  $45^{\circ}$ . The more sick it is, the more it raises the beak.

The birds have a very tight grip on the twigs, and are almost impossible to shake off. Having had the opportunity to study the Humming Birds for many years, I have not yet seen any of them "putting their heads under their wings" as many other birds do when sleeping.

During sleep the body-temperature of these birds, which is normally about  $42^{\circ}$  centigrade, drops considerably. Their consumption of oxygen is very reduced in this condition which can practically be called a state of torpor. I beg to refer to an article by Dr. F. W. Braestrup in the Danish Salmonsens's Cyclopædia, where he quotes an article by Oliver P. Pearson in "The Condor", vol. 52, page 145, 1950: "By Hummers the amount of oxygen varies throughout the twenty-four hours. The Humming Bird spends the night in a lethargic slumber during which the metabolism descends to about  $\frac{1}{20}$  of the normal one. Some birds could not exist at all without becoming torpid every night. The very small kinds of Humming Birds have a metabolism of such a rapidity that they could not take sufficient reserves of nourishment to survive a night without eating, if the expenditure of energy at night were normal. This is a consequence of their very modest size."

The Humming Birds have a fantastic energy and endurance which is illustrated by the following. In *Birds of America*, page 183, ii, T. Gilbert Pearson writes among other things: "These Humming Birds winter to a limited number in South Florida. The bulk of them, however, go farther south. In the autumn nights the little birds launch out across the Gulf of Mexico straight for Yucatan or Central America. This incredible journey, not less than 500 miles ( $937\frac{1}{2}$  km.) is made without a single stop for food or rest."

The Humming Birds are in their own way very intelligent and independent animals. So they are very often in a surprising way able to get along in an unforeseen situation. Their sense of direction is fantastic, and they very soon get accustomed to new surroundings and new conditions. They do not show any fear of the keeper going into their cages every day to feed them and to clean the glass. Their senses are developed to an astonishing degree: the sight, hearing, and as I think also, to some extent, the sense of smell, are excellent.

In order to be sure that all the birds get sufficient to eat, we always place a great number of feeding-glasses in our cages. Some of them are hidden behind the big green leaves, and these glasses are of special importance to the weaker birds and the newcomers, which are very often chased by the other ones. Each glass is suspended by a specially



constructed holder and contains about 40 grams of liquid. According to our experience every Humming Bird drinks on an average between 17 and 15 cm<sup>3</sup> of liquid in the course of twelve hours. Taking into consideration the weight of the birds (1½–4–5 grams), this seems quite fantastic.

The glasses are furnished with a soft rubber cork and both this and the glass must be kept spotlessly clean. The birds are fed twice a day.

The *Morning Food* (at 8 o'clock) for forty birds consists of 1 litre of water, 4 table-spoonfuls of honey (about 125 g.), 3 table-spoonfuls of condensed milk with sugar (about 40 g.), 1 table-spoonful of Mellin's Food (about 10 g.), and a pinch of meat extract with salt (about 3 g.). To this quantity is added 5 small drops of A and D Vitamins. Each drop contains 750 units of A and 125 units of D vitamins. The vitamins should be stirred very carefully in the condensed milk and a little hot water; the rest of the water (about 750 g.) should be lukewarm.

At about 4.30 in the afternoon (on hot days a little earlier), the morning food is replaced by the *Night Food*, which does not become sour even if remaining 12 hours or longer in the cages. The night food consists of 1 litre of lukewarm water, 5 table-spoonfuls of honey (about 160 g.) stirred and mixed up with the contents of 1 ampoule 10 mg. of vitamin B (chlorhydrate of thiamine), and 1 ampoule of 100 mg. vitamin C (ascorbic acid).

The recipe of this vitamin food has been given by Mr. Charles Cordier in the AVICULTURAL MAGAZINE, Vol. 58, No. 4, page 143, July–August, 1952, in an article entitled "A Better Way to feed Humming Birds". In the Copenhagen Zoo we have, however, with what I should call fairly good results, been using for many years what Cordier in his article calls "an antiquated formula" which contains less honey but some sugar and 2 tablespoonfuls of Mellin's Food. We have now started *gradually* to reduce the quantity of Mellin's Food and to increase the quantity of honey. There are, however, two things Mr. Cordier does not mention in his article: fresh water and the provision of live insects. As most Humming Birds in a wild state eat quite a lot of small live insects, etc., I attach great importance to this kind of food. In 1934 I brought along with me about 25 live fruit-flies (*Drosophila repleta*) from the Zoological Garden in Berlin and having later established a special fly-farm we have now reared millions of these small insects. We catch them in a net and release them alive to the birds which catch them in the air and eat them.

All our Humming Bird cages are of course made in a way to prevent the small flies from escaping.

During the years in which we have kept Humming Birds we have several times had to deal with severe invasions of red ants (*Mono-*



*morium pharaonis*) in our cages. These small pests climbed from the walls on to the branches and from these down along the suspended feeding-glasses sometimes in such numbers that the spouts of the glasses were nearly stuffed up. We found that the Humming Birds did not like this and consequently to some extent kept away from the liquid food. By suspending the feeding-glasses in yet another piece of steel-wire which goes through a small glass tube almost filled with ordinary water and with a cork at the bottom, we have now been able to stop this plague. The red ants cannot now get at the liquid food and for this reason leave the cage in search of other food.

Before making use of our little "invention" the average quantity of liquid food consumed by each Humming Bird during its twelve feeding hours was  $14.655 \text{ cm}^3$ , but afterwards  $14.815 \text{ cm}^3$ . This shows an average difference of  $0.16 \text{ cm}^3$  for each bird during its twelve hours of feeding and besides it clearly shows how even small things can be of importance in connection with the feeding and management of difficult or delicate animals in captivity.

Humming Birds in captivity have to be constantly and carefully examined. The claws should be cut when too long, as otherwise the birds do not fly as much as they should. It has happened now and then that some of the birds get a kind of paralysis of the tongue which then cannot be withdrawn but remains more or less protruding from the beak. Even if the tip of the tongue is quite dry, the bird is able to live for quite a long time. I have been told that this is due to the bird having caught a cold. I don't understand, however, how this suddenly can happen to birds living in such a steady temperature. We have tried to cure such a case by giving the bird aureomycin dissolved in the food, but so far the result has not come up to our expectations.

How long do the Humming Birds live in captivity?

Unfortunately, I have only very little information from other Zoological Gardens, and can only say that we have lost quite a lot of Humming Birds since the war because they arrived in a miserable condition. I have not yet had time to treat this matter statistically, but I am able to state that 28 birds or more than 38 per cent of our first stock (from 17th May, 1935, till 5th June, 1945) consisting of 74 Humming Birds lived more than one year, 8 birds or 11 per cent lived more than two years, and 5 birds or 7 per cent lived more than three years, 1 bird lived almost four years, and finally 1 bird eight years less thirteen days.

For further details, I should like to refer to my articles in the German periodical *Der Zoologische Garten*, 1941, vol. 13, page 167-178, and the AVICULTURAL MAGAZINE, Vol. 54, No. 3, pages 69-79.

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## 1952 BREEDING RESULTS AT LECKFORD

By TERRY JONES (Leckford, Hants, England)

It has been a fairly good season here, but when a collection is as big and as varied as this one it is almost impossible to have a good season with every kind of bird.

The Parrot family has done badly. We had a good pair of Princess of Wales who reared young every year. This year the pair bred satisfactorily, hatching four young and rearing three, all strong birds. One night there must have been a cat or something on the aviary roof. The aviary is 72 feet long, and the birds have distance enough to acquire some speed, enough speed with which to kill themselves against the wire, and unfortunately this is what happened, and now we have the mother and one youngster only.

Incidentally, some people may not know that this species is one of the few Parrakeets larger than a Grass Parrakeet which is not destructive to shrubs. The Stanley Parrakeets excelled themselves this year, laying six eggs and hatching and rearing one.

Last year we reared a number of Fischer's Lovebirds, and I decided to keep them to try to build up a good breeding stock! Even if I could sell any of them to-day, I should hardly get any more for the whole lot than I could have got for one pair of young birds last year. This species bred quite well again this year.

And so we come to the Peach-faced Lovebirds. Here again we are in trouble. In 1950 we bred some nice young birds from a very old pair which died last year. Then in *Cage Birds* in the autumn of 1950 I saw an advertisement offering three young unsexed Peach-faced for sale. These I bought, and after marking them and our own three by cutting a few feathers on the back of the head of one, shoulder of another, tail of a third, and so on, we turned the six out together. The food room window overlooks their outdoor flight, and the idea was to watch the birds unobserved by them, and to note which fell in love with what. It seemed a foolproof way of sexing these difficult birds. Mrs. Milligan, whose charges they are, spent days, weeks, and months watching them. They got along fine, and were nearly always in pairs, but the snag from our point of view was that *A* who is sitting with *B*, was sitting an hour ago with *C*, and has in fact sat with the rest. My idea of a pair is the same as Noah's, but their idea of a pair was two birds, simply that!

The summer of 1951 they spent all together. We never saw any bird feed any other. We put up enough boxes to look like a "Development Area" and supplied willow and lime boughs. The birds had a grand time stripping the boughs and in clambering in and out of boxes, but no material was carried into the boxes. This spring, 1952, Mrs. Milligan had decided that *A* was now paired to *B* and *C* to *D*,



so they were put in separate aviaries. "They were not hatched till August," we told each other, "and were too young to breed last year." But nothing has happened at all this year till the other day, late October, when *B* was seen to stuff a splinter in her rump feathers and fly to a box. These boxes had not been removed, as no one seemed in danger of egg-binding. However, they were promptly removed and in early November *B* laid an egg from a perch. At last we know the sex of one of the party, and now we must wait till 1953. This has cheered us up so much that Mrs. Milligan has been rash enough to say that she is certain that *D* also is a hen. Having spent two seasons wondering whether all were males, I now am wondering whether perhaps all are females. We tried sexing the birds by the width between their pelvis bones, but anyone who has kept poultry knows how much the width varies according to the state of the bird's ovaries.

In Nyasa Lovebirds we had an old bird and three youngsters, which came from the Duke of Bedford. One bird died during the winter. The three between them built two nests, but forgot to lay. I must try to get some more of these nice little Lovebirds, and see whether we can pair them up more successfully than we have the Peach-faced.

The two Touracous we know are both hens and, as they do each year, both laid and sat on their eggs. One of them is a delightfully tame bird who has been here since 1938. The Sun Bittern, a charming small owl from New Caledonia, or somewhere like that, are both pre-war birds and continue to thrive, and so do the two cock Wonga-wonga Pigeons, also pre-war birds.

The breeding results amongst the Pheasants is also mixed. We will start with the bad news. No. 1 pair, Monals, had been together for ten years, and were a very good breeding pair. Without any warning the cock murdered his wife. No. 2 pair: Again a good breeding pair. Something scared the hen one day in early spring, and she was found limp and warm with a smashed skull. Pair No. 3: A cock which was very tame and a young two-year-old hen, daughter of one of the above, who was laying for the first time. She laid just one clutch of eggs. Six, I think, were hatched and five reared. These five are possibly all cocks!

Besides the above we have a very nice 1951 cock we had kept as a store bird, intending to reserve him a mate from this year's crop.

Chinquis Peacock Pheasants are another poor patch. We lost three old birds; two of them the best pair we ever had, were well pre-war. But we have some nice young pairs, so next year we should be all right. Only two young were reared this year.

Elliotts were new birds. The cock went into a moult as the hens started to lay. Only two eggs hatched, and these proved to be a pair, but the cock unfortunately, though a very vigorous bird, has bad feet.



A young pair of Grey Jungle Fowl were also newcomers. The cockerel crowed day and night, particularly at night. A cheerful guy, bred from American stock, he shouted his curious call which sounded to me like "Chum—hi-yeah! hi-yeah—chum!" He had ceased crowing when his little hen eventually laid five eggs which proved clear. Eight young Brown Crossoptilons were reared from one young pair; the second pair did not breed. Incidentally, our males are spurred, as was the pre-war European stock. Twenty-three Mikado were reared, fine birds, but I am afraid a rather henny lot; 16 Temmincks Tragopans; 16 Blue Crossoptilons, 15 Swinhoes, 11 Edwards, and 27 Amherst.

Swans. The old female Black Swan is at present a widow, and having a well-earned rest from child rearing. She and her mate, who came here as adults in 1937, have bred continuously ever since, not quite managing three broods a year. They have hatched cygnets in every month of the year, and have never lost a cygnet. She has been single since February, but a mate should arrive soon. Her daughter is due to start breeding next spring. The Whooper female is a failure in that she prefers human society to Swan's. She lays every year between eight and fourteen eggs upon which she dutifully sits. Unfortunately, she almost always forgets that male Swans have a small part to play. Only twice has she had a family, some years ago she had two, and now she has a ewe lamb. I saw her bring this one to the water. The father was delighted, and thinking he was going to play the male Swan's role of guard and guide, he swam to meet his family. He was promptly seized and thoroughly beaten up. Swans apparently suffer from a social handicap which forbids a chap to thrash his wife, however badly she behaves. He spent most of the subsequent weeks standing on the bank. He is now suffered within the family circle, but is hardly made welcome.

The Black-necked Swans are immature, or rather the female is. We have three males and one female at present.

Geese. Six Greater Snow goslings were reared from our old Goose, who must by now be the ancestress of most of the European stock, and of quite a few of the American. Two Emperor, 4 Ross, 3 Barhead, 4 Redbreast, 8 Magellan, 6 Ashyhead, 10 Ruddyhead were reared. The Abyssinian Bluewinged let me down. I acquired a completely unrelated gander from the Severn Wildfowl Trust, and paired him to a goose who has laid each year till this year. The gander never came into full breeding condition, and so she did not lay. I am hoping to make him madly jealous next year by giving him suitable neighbours.

Sheld-Duck. Nine Radjah were reared, also fifteen Ruddy and about the same number each of Common and South African. The Red-billed Pintail laid, but her pre-war mate was beyond breeding age. We have now got a nice young male bred this year at Slimbridge.



We have been lucky in breeding each year for several years now a species of waterfowl which either has not been bred previously or has not been bred for many years as in the case of the Marbled Teal. This year it was the Philippine Duck, *A. luzonica*.

The Severn Wildfowl Trust very kindly lent us their pair on breeding terms. This species was well illustrated in the AVICULTURAL MAGAZINE for Jan.-Feb., 1952. The male and female are similar in colour, the body soft greyish stone, the neck and face a bright rusty buff, top of the head and a broad eye streak are black, bill blue. It is a handsome species, and in my opinion competes with the Spotbill for second place in the Mallard beauty competition. The pair here were very peaceful and I never saw the drake take the slightest notice of any other species except of Mallard drakes, and to these he objected very strongly. The drake's call is more drawling than a Mallard's. He chatters very little to his duck or she to him. Her call is very similar to a wild duck's. The drake's display seems much simplified. The only form I have so far seen is what I call the fast-swimming display. In this, like the Yellowbill drake, he swims fast either ahead of his duck or round her; his body is elongated, and the base of his neck awash, the head erect and jerked backwards and forwards. The display is probably the same as the Yellowbills, but the above is all I have seen so far. The duck courts him as does a Mallard female her drake, but less violently, less often, and with far less chatter. Mating is the same as the Yellowbill. The duck's first nest was made in some rank grasses, and was a substantial affair, so much so that the day the first egg was laid, 7th May, I was passing the nest, which I already knew of, and a man who was nest-hunting nearby said: "There's an egg in that scrape by the stick in the top block." "What colour is it?" "Greenish." I presumed it was a Red-crested Pochard's, and did not go to collect it till after lunch, when the egg had vanished. I put a dummy in the nest and, at a distance of about three feet, completely encircled it with a narrow band of kreosote. A good way of protecting a nest from ground vermin. No sniffer will cross the band. The following morning I looked first thing. The dummy was there and beside it an egg of the palest eau-de-nil, almost white. The egg was of normal shape, and between a Shoveler's and a Red-crested Pochard's in size, but when compared with these it was paler and the colour very clean, not muddy as are the other two. Dr. Ripley describes his ducks' eggs as very round. I think all species of duck, tree duck excepted, tend to lay a normal shaped egg, but individuals vary greatly. One of my Shovelers lays sausage-shaped eggs, while the other lays normal ones; both hatch equally well. Ten eggs including the missing one were laid on consecutive days. Down was very like the Common Pintails. Incubation 25-26 days. The ducklings on hatching were comically like their parents in design. The body colour was olive,



vaguely showing the Mallard family flank and hip markings, but the necks and faces were bright yellow plus dark eye streak and cap as in the adults. In the first plumage the head markings seemed identical to the adult plumage, but the body plumage lacked the grapelike bloom of the adult. They grew quickly, and were easily reared. The old duck made a second nest under a Guelder rose bush. The nest was again a bulky affair, composed chiefly of sycamore leaves which had lodged under the bush. She laid seven eggs, and then had some internal trouble, failed to lay the eighth, and was dead by 10.30 a.m. We removed this egg from her body, but it was the only egg which failed to hatch. Fifteen ducklings were reared to maturity.

The little American Ruddy Duck laid well; her extraordinary eggs, almost as big as a Sheld-Duck's, were of the same lovely shagreen texture as the Black Swan's.

Heartbreaking creatures to rear under a hen, because they can barely walk, and will only feed in water. They won't leave their mother's flanks, and she would not swim! However, we eventually reared four, all females. Next year we hope to do better now we know what we are in for.

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## BREEDING NOTES 1952 AT WOBURN

By THE DUKE OF BEDFORD (Woburn, Beds, England)

The breeding season of 1952 produced, on the whole, rather more than the average crop of troubles and disappointments. March went out like a lion after deceptively lamb-like behaviour earlier. As a result both my hen Princess of Wales Parrakeets got egg-bound. One died later of another complaint, and the other did not nest a second time. The eggs, given to Rock Peplars, failed to hatch. Later in the year I also lost one of my cocks from a mysterious injury.

The hen Crimson-wing of the breeding pair also got badly egg-bound, and I thought I should lose her, but she laid in the end, although the eggs, given to Green-winged Kings, failed to hatch. I think I am now well and truly cured of allowing early breeding with many species of Parrakeets. Even if the hens escape egg-binding, the fertility of the cocks early in the season is apt to be poor.

I did not put the Crimson-wing back in her breeding aviary again until mid-May. She laid again and reared four fine youngsters. My old pair of Rock Peplars reared three young ones and a new pair consisting of an imported Victorian cock, and an English-bred hen reared four. Rock Peplars from Victoria are much to be preferred to those from Western Australia on account of the fine clear yellow colour of the cocks. I also had a 1951 cock that had been trained as



a liberty bird, and I used, for a time successfully, in training the Victorian cock's four offspring. After a few weeks, however, he disgraced himself by going off, taking the young hen with him. Some weeks later she returned alone, so presumably he met with an accident. As a rule young Rock Peplars, properly trained and managed, can be flown as day-liberty birds with perfect safety for about six weeks, and great is the enjoyment to be derived from their superb flight. If allowed out much longer they tend to go wild and eventually are lost, so that it is necessary to catch them up and confine them until the cocks have mated, when the presence of their wives in aviaries should "anchor" them for good. Hens are always worse stayers than cocks, and are better kept in as soon as their sex can be determined with some degree of probability.

Green-winged Kings, as usual, had two lots of clear eggs. They seem to be too old to be fertile, although they are most eager to go to nest.

Browns repeated their disappointing failure of last year, losing their young for no obvious reason at about 10 days.

In the spring I had obtained three imported Browns, but they seemed to have no constitution at all, and got ill again and again even while still in the heated birdroom. One hen soon died of an unusual throat ailment. The cock, after about half a dozen illnesses, swallowed the bristle of a brush which at length finished him. After that his mate, who had been getting ill even oftener than he, blossomed out into robust health and breeding condition. Who says there isn't an X!?

Two pairs of English-bred Pileated Parrakeets each hatched their six eggs, but made a poor job of rearing, only three young surviving in each case. The old birds plucked their offspring, one pair very badly, the cock being as serious an offender as his mate.

The hen Barnard would not settle down. She only laid one egg and did not sit.

The Blue Indian Ringnecks did better, rearing four young. I tried a year-old cock blue with a lutino hen but, though he displayed, he was too young to mate and the eggs were infertile. Later the hen died and a pair of two-year-old lutino-bred greens lost their young, probably through the hen getting ill.

Gang-gang Cockatoos reared a pair of young, but the hen injured herself severely the day she left the nest. She is now, however, nearly well.

Roseate Cockatoos this year were a failure. The old albino hen mated to her son laid again after an interval of nearly fifteen years, but the eggs were infertile. Another white-bred cock mated to a normal grey hen did not breed, although the hen had nested regularly in previous years. Two young 1951 normal Roseates which I hoped to



establish as liberty birds behaved in a disappointing fashion, although those that one breeds are normally good stayers. I first released the young hen. She went out quietly and looked like settling down, but the following day she removed herself to the Battlesden area, about three miles away, where she settled down as a wild bird. Her brother, when first released, stayed well, and after a few weeks I used the parent cock as a decoy and captured his erring daughter without difficulty and brought her home. For a short time she stayed well with her brother, then the pair returned to Battlesden. After some weeks one returned and spent a few hours at the aviaries, but again went off in the Battlesden direction, and soon all news of them ceased. (By a very strange coincidence Pennant's Parrakeets were bred *at liberty* at Battlesden in 1871, forty-three years before I bred them at liberty at Woburn !)

A lutino cock Nyasa Lovebird mated to a green hen did not nest this year, and pretended to be terribly nervous, although they had lived in aviaries and wintered in cages for years. Possibly these lovebirds, like budgerigars, nest more readily in colonies.

As the cock I had obtained with much difficulty had died suddenly during the winter, my two hen Naretha Bluebonnets continued in unrelieved spinsterhood and, like the widowed hen Browns, in much more robust health than they had enjoyed when there was a prospect of getting them mated !

This year I started a new aviary of liberty Budgerigars in Devonshire, the foundation stock consisting partly of homing birds from Woburn and partly of non-homers. They were kept shut into the aviary until the young of the first round were leaving the nest, and when released the homers behaved as well in their new locality as they had done in the old one. The non-homers, as at the beginning of my experiment at Woburn, either proved "non-exits" and did not go out at all, or gave a certain amount of trouble by straying. Of those that strayed and were reported and recaptured with the aid of a spare cage containing food and another cage with a decoy, some proved sensible the second time, and some did not go out again. Budgerigars and other Parrakeets, on finding themselves free, may go off for different reasons. Some depart because they really *want* to go. Others do not really wish to leave, but are puzzled and confused by their unaccustomed freedom, and lose their heads and their way. Very quickly, however, they learn to manage themselves in the air and to fly *down*, and if they can be recaptured may give no more trouble. The other type are, however, hopeless as liberty birds. Very young birds only just able to feed themselves will usually "home" for a time, even to a new aviary if it contains plenty of others of their species, but their subsequent performance will depend on how they are bred. Young birds whose eyes and ceres are beginning to change



colour are at the worst age for release in a strange place. Even homers that have flown at liberty elsewhere are not to be relied on. If purchased at this age they must be confined until they have bred, and their young are leaving the nest.

The homing Budgerigars at Woburn started the season very well, but I made two mistakes later that taught a rather unexpected lesson. In previous years I had allowed some birds to continue breeding until late autumn, although I did not permit any individual pair to rear more than two broods. This season, however, the Budgerigars were staying so well and the aviary was getting so overcrowded that instead of disposing of surplus stock then, as I should have done, I stopped all breeding in the aviary. I also made what proved to be another mistake. Previously the birds in the liberty aviary had never all gone out together. Some always remained inside. One day, however, I drove them all out at once, and although some began to re-enter within a few minutes it was clear that I had caused a psychological upset. The birds that came in were much disturbed at finding the aviary empty. "The place didn't feel the same," and after feeding quickly and nervously they flew about restlessly like wild birds trapped in an enclosure, and quickly made their way out again. This and the stopping of all breeding had a curious and lasting effect on the mentality of all the occupants of the aviary. They became wild and scary; lost their steadiness and would no longer feed from millet sprays held in my hand; were subject to panics and stayed in the shelter long after sunrise as they do when there is a Sparrowhawk about. Young hens did not come into breeding condition and select nest boxes eight weeks after leaving the nest themselves, as is usual. They moulted and still showed no interest in nesting. Finally they began to stray, going off in small parties and—which had never happened before—even some old breeding birds of both sexes were among those that left. To check this tendency I introduced, from the hens' resting aviary, three homing hens I judged to be in breeding condition; but these also showed no interest in the nest boxes, and two even went away.

I then kept the birds shut up entirely for about a fortnight, introducing four more homing hens from the resting aviary. That did the trick. After a few days these hens selected mates and nest-boxes. Their example infected all the young hens of different ages, and they too rushed into breeding condition. The temperament of all the birds in the aviary likewise changed; their tameness returned; and when they were again released there was no more straying, even among unmated birds.

It is clear, therefore, that the attraction which "anchors" homing Budgerigars to their aviary is its significance to them as a breeding place. This must on no account be upset except of course during



the winter, when the short days and absence of wild foods reduce the temptation to stray to a minimum. Next year I intend to arrange two breeding "shifts". Towards the end of February I shall introduce about eight fully adult hens, leaving them to select their partners from the considerably larger number of cocks occupying the aviary. At the end of June, when they have reared their second broods, I shall put them and, for a few days, their mates also in the resting aviary, providing another eight hens for the cocks that have not yet bred. I shall have the first catch-up of surplus young birds about the same time, and may confine the whole flock for some days to allow the new adult hens to choose their nests and mates and the young hens to profit by the good example set them! Past experience has shown that it does a hen no harm whatever to allow her to have one nest as soon as she wants to, provided she lays before 1st September. Her young may not always grow into large birds, but there is rarely much wrong with them either. Cocks that have bred early in the season I shall return to the liberty aviary as soon as the second lot of adult hens have mated. They can then moult and rest and, as the aviary will still have a "breeding atmosphere," they are not likely to stray. Experience has again shown that whereas a "breeding atmosphere" is a vital factor, it is not necessary for every cock in the aviary to be mated to keep him at home.

For waterfowl the season has been the worst I ever remember. Never before have vermin been so active in destroying eggs, young, and sitting birds, and never before, among the geese, have so few pairs gone to nest or so many eggs proved infertile—under conditions identical with those which in previous years have produced quite good results. The only geese reared have been one Emperor, one Red-breasted, and one Magellan, and the only ducks (apart from wild Mandarins), about two dozen Carolina.

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## THE SOCIETY'S MEDAL

The Council proposes to award the Society's Medal to: H. J. Indge, for breeding the Red-sided Eclectus, *Lorius roratus pectoralis*.

Any member or reader knowing of a previous breeding of this species in the United Kingdom or Northern Ireland is requested to communicate at once with the Hon. Secretary.

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*[P. Barclay-Smith*

MADAME JEANNE DERSCHIED

(At the International Zoological Congress, Paris, 1948).

*To face p. 17.*



## OBITUARY

## MADAME JEANNE DERSCHIED

The news of the death of Madame Jeanne Derscheid which occurred at a few minutes past midnight on the night of 2nd-3rd January, 1953, will be received with the greatest sorrow by her many friends in the Avicultural Society. The British and Americans have particular cause to be grateful to Madame Derscheid, her husband, and their family for the great part they took in the Escape Service which achieved the safety of many British and American airmen during the last world war ; a service for which Dr. Jean-Marie Derscheid gave his life. On two occasions Madame Derscheid was imprisoned as a hostage on account of her husband's activities and was decorated for her own services with the *Médaille de Prisonnière Politique*, *Médaille de la Commune*, and *Médaille de participation aux œuvres de Guerre*. In 1948 Madame Derscheid received from Field-Marshal Montgomery the late King George VI's Commendation for Brave Conduct which His Majesty had commanded she should receive personally on behalf of her husband in recognition of special services he rendered to the Allied cause during the war and which proved of particular value to Great Britain. Madame Derscheid was also presented with a similar Certificate by the U.S. Ambassador in Belgium expressing the gratitude and appreciation of the American people for the gallant service performed by her husband in assisting the escape of Allied soldiers from the enemy.

Madame Derscheid shared her husband's interest in birds and aviculture and actively assisted with the famous collection at Armendy before the war, particularly in the rearing of rare ducks. In 1929 and 1930 she accompanied Dr. Derscheid to the Belgian Congo, when he led a scientific expedition to Kivu and the regions of the Albert National Park.

After the war Madame Derscheid made many visits to England and was on three occasions the guest of honour at dinners of the British Aviculturists' Club. Though assured of a warm welcome as the wife of a great aviculturist she earned a special place for herself in the affections of everyone who met her by her gentle charm, natural friendliness, and spontaneous gaiety. Madame Derscheid took a great interest in all the affairs of the Avicultural Society and was instrumental in procuring numbers of new members in Belgium ; she also organized the Belgian participation in the most successful Anglo-Belgian-French week-end meeting of aviculturists which was held at Clères in May, 1950.

Her premature death after a severe illness which she bore with outstanding courage is yet another tragic loss to her son, Jean-Pierre Derscheid, and the deepest sympathy is offered to him and his grandmother, Madame Gustav Derscheid, in their great sorrow. P. B-S.



## FIVE RARE NEW ARRIVALS AT KESTON

By EDWARD J. BOOSEY (Keston, Kent, England)

During last year (1952) we received a few welcome and rarely-imported birds at the Keston Foreign Bird Farm.

The first to arrive was a pure lutino Plumhead Parrakeet; then came two pairs of Lilac-crowned Fruit Pigeons (*Ptilinopus coronulatus*), and half a dozen Citron-crested Cockatoos (*Cacatua citrinocristata*), followed by six Layard's Parrakeets (*Psittacula calthorpæ*), and finally, three pairs of the Cuban or White-fronted Amazon Parrots (*Amazona leucocephala*).

Layard's Parrakeet is very rarely imported indeed, probably because of its restricted range, as it is entirely confined to the Island of Ceylon, and does not extend to any part of the Indian mainland. The six we have are young birds of the year, and were very kindly presented to us by Major Weinman of the Colombo Zoo, who, with his wife and son, paid a visit to our farm about a year ago, and we are most grateful to him for this welcome gift.

To take the first arrival first: The lutino Plumhead was an immature and rather delicate-looking specimen, and twice it nearly died. At first it shared an aviary with an ordinary green hen, and both were given sweetened bread and milk and millet spray, as well as apple and the ordinary seed mixture. At first they ignored the latter, having been sent over on nothing but small brown Indian millet. Later on, however, both (as we supposed at the time) started to eat the normal seed mixture, and the daily amount of bread and milk and millet spray was gradually reduced, although a plentiful daily supply of apple was still maintained. The lutino, however, showed increasing signs of weakness, and it was only just in time that we discovered that it was the hen alone who had taken to the normal seed mixture. After that the lutino was put in an aviary by itself and given plenty of bread and milk, apple, and millet spray. Even so, however, it did not really seem to flourish and eventually got a bad chill and had to be put in the hospital. It was very weak, and I had not much hope of saving it; nevertheless, it finally pulled round, and the fact that it is alive and very flourishing to-day is really due to the fact that I happened to put it to share an aviary with a heated shelter with a pair of the Fruit Pigeons. The latter's staple diet consists of boiled maize and rice sweetened with Nestle's milk, and having sampled these the Plumhead decided at once that they were the ideal diet for a delicate Parrakeet, in which apparently it was right, for it has never once looked back since it started eating them. After the autumn moult it assumed full adult plumage with the typical long tapering tail of a Plumhead, and is now very handsome with a bright golden-yellow body and flesh-pink head.



The two pairs of Lilac-crowned Fruit Pigeons (which, incidentally, were sold as Jambu Fruit-Pigeons and not as Lilac-crowns) were sent to us by air from Singapore, and arrived in quite good condition, in spite of the fact that they had been given nothing but ordinary uncooked maize to eat on the journey. They seem even more quarrelsome than ordinary doves and pigeons and one of the hens bullied the other so badly that the pairs had to be separated with all speed. Nor did they hesitate to attack the Plumhead Parrakeet when it was first put in an aviary with them, buffeting it with their wings if it ventured anywhere near them. Now, however, the three have formed one of those improbable bird friendships, and it is a curious sight to see the two Fruit Pigeons and the Parrakeet sitting side by side on a perch, so close together as to be actually touching—all their former enmity forgotten !

The Fruit Pigeons are very beautiful, a rough description of them being that they are green, with a wide diffused orange band across the breast, in the centre of this band being a patch of pale violet. The feathers of the neck and crop are grey with a greenish tinge and are rather stiff and pointed, like the feathers of a cock's hackle, and the crown of the head is a very lovely rosy-lilac colour narrowly bordered with yellow. They inhabit the Aru Islands and New Guinea, and are quite small.

Some species of Fruit Pigeons—and I rather think this one among them—have been given the reputation of being hardy if shut into a cosy shelter on winter nights, but although this may be the case once they are thoroughly acclimatized, they certainly need heat during their first winter in this country. Ours arrived about the end of August, and I was able to put them in outdoor aviaries as soon as they had recovered from the journey. Directly the weather became at all cold, however, it was obvious that they would have to be given heat, but although we have had some quite sharp frosts of late, one pair are so far doing very well in an aviary with a lamp in the shelter. This pair is the better of the two, and with the other pair we had a stroke of bad luck, as the cock got a chill as soon as the weather started to turn cold. He was put in a hospital cage, and was recovering when the heat supply failed during the night, and he was found dead in the morning, so we now have a pair and an odd hen, and I shall keep the latter and hope to breed a mate for her next summer. This, incidentally, would not be a first breeding, as Captain Stokes successfully bred Lilac-crowns on more than one occasion some years ago, and found that, like the Ruddy Quail Dove and Bleeding-heart Pigeon (both of which we bred at Keston before the war) the young leave the nest at a very tender age.

Judging by our Lilac-crowns, Fruit Pigeons differ in several respects from the grain-eating species : they fly quickly but less gracefully



than the latter ; the under-surface of their feet is flatter and they have a tenacious and rather reptilian way of gripping one's finger or a perch, which doubtless enables them to clamber swiftly about among the branches of the trees on the fruits of which they feed ; also they seem very silent birds, and I have never heard ours utter more than an occasional low murmuring sound, though they may become more vocal in the spring.

They have proved unexpectedly easy to cater for in the matter of food, and ours have come into excellent condition on a diet consisting solely of boiled kibbled maize and rice sweetened with Nestle's milk and then drained, with cored, peeled, ripe sweet chopped-up apple added each day before it is given. This diet has the added advantage of keeping their faces as clean as possible, whereas I find that if they are given mushy fruits such as plums and bananas they get themselves in a fearful mess.

I had somehow never thought of Citron-crested Cockatoos as particularly attractive, but the six that arrived here by air and in excellent condition quickly made me change my opinion of them, and I think that with their lovely combination of orange, palest lemon-yellow, and snow-white, they closely rival Leadbeater's for beauty. The general body-colour is white, with the under surface of the tail and a patch on the cheeks pale yellow. The crest, which is very large, particularly in the male, who can spread it almost as far forward as a Leadbeater's, is bright orange.

Many birds are stupidly named—this one being a good example—and I cannot imagine why, when a bird with a crest the colour of a ripe lemon was aptly named the Lemon-crested, or Sulphur-crested Cockatoo another bird with a crest the colour of a ripe orange should not have been named, with equal aptness, the Orange-crested Cockatoo—and it is only fair to add that the inhabitants of its native land have apparently had the sense to call it this ! as we were offered them not as Citron-crested but as Orange-crested Cockatoos.

Their one disadvantage is their extreme shyness. The cock of our pair is even shyer than the hen, who does very occasionally venture out into the open part of the run if she thinks there is nobody about. Another peculiarity—and one that would be a great advantage if one of these Cockatoos was kept as a pet in a room—is that they are an extremely silent member of an extremely noisy family, and I cannot recall having heard either of ours utter a sound of any kind, except when they were being caught to be transferred to their present aviary.

The Layard's are charming little birds and quite tame and steady. They are about the size of a Plumhead, but their tails, instead of being long and tapering, are quite short. The six Major Weinman has given us are as yet in immature plumage and are predominantly green, brighter on the head, and brightest just below the blackish



neck-ring which is just starting to appear in some of them. The two central tail feathers are fairly dark blue tipped with greenish-yellow, and the rump is lilac-blue. Four of them have red beaks, and the other two black ones, so it looks as though we have two pairs and two odd birds. I am not, however, certain of this particularly because one of those with red beaks has to my mind an unmistakably feminine look about it, and its beak rather looks as though it may be in the process of turning black. I am not certain about the colour changes of the beak in young Layard's, but in their relative, the Malabar Parrakeet, young males have the curious, and I should think unique, habit of starting with a red beak which later turns black, and later still turns red again ! Young females, on the other hand, merely start with a red beak which later turns black.

Adult Layard's are most attractively coloured, having the head lavender-blue and the mantle the same colour shot with grey. The young Layard's have settled down well in an aviary facing south with a heated shelter in which they are shut each night. Like the lutino Plumhead, they all eat bread soaked in sweetened watered milk, and are very fond of boiled sweetened maize and rice, all of which should prove valuable additional rearing foods if we are successful in breeding them.

The last birds to arrive were the three pairs of Cuban Amazons—the first we have ever been offered since we started the farm. I have always thought them one of the loveliest members of the family, as the deep rose-pink of the cheeks and throat goes so beautifully with their main body-colour of green and the feathers of the head, neck, and forepart of the body strikingly bordered with black. The crown is white, and there is a considerable amount of purplish vinous-colour on the lower breast and abdomen. The beak is very pale, almost white. They are considerably smaller and slimmer than Blue-fronts, and seem fairly easy to sex, as the hens have smaller, rounder heads and the rose-pink area in their plumage is rather less extensive and not so well-defined.

The three pairs we have are in an outdoor aviary with a heated shelter, and have not yet been let out into the flight, as I think they are far better off inside so long as this arctic weather, which this year has come so unseasonably early, persists—which I sincerely hope it will not do for long, as we usually get quite enough of it in the first three months of the year.

\* \* \*



## REARING CONDORS IN CAPTIVITY IN THE UNITED STATES

By KENTON C. LINT (San Diego, Calif., U.S.A.)

The Andean Condor, *Vultur gryphus* Linné, is an inhabitant of the mountain chain of the Andes. It is found principally in the Peruvian and Chilean Andes, but it also ranges as far north as Bogotá, and south to the mouth of the Rio Nigro on the east coast of Patagonia. According to the early observers, it was described as frequenting the loftiest peaks of the Cordilleras, but later writers deny this, and say it rarely ascends above 16,000 feet, while the normal range is the zone lying between 9,000 and 15,000 feet.

The Andean Condor is not only the largest of the birds of prey, but the largest land bird of flight. Over a period of ten years, 1942-1952, the Zoological Society of San Diego has hatched eight Condor babies and reared seven Condor chicks to maturity. All seven birds are living and on exhibition in Zoological Gardens in the United States.

The first Andean Condor raised in captivity in the United States was hatched 8th July, 1942, in the Zoological Gardens of San Diego, in our large flying cage. The first baby proved to be a male, and was sold to the Washington D.C. Zoo, where it is still on exhibition.

Again, on 8th June, 1945, the second Andean Condor baby was hatched and raised, another male bird.

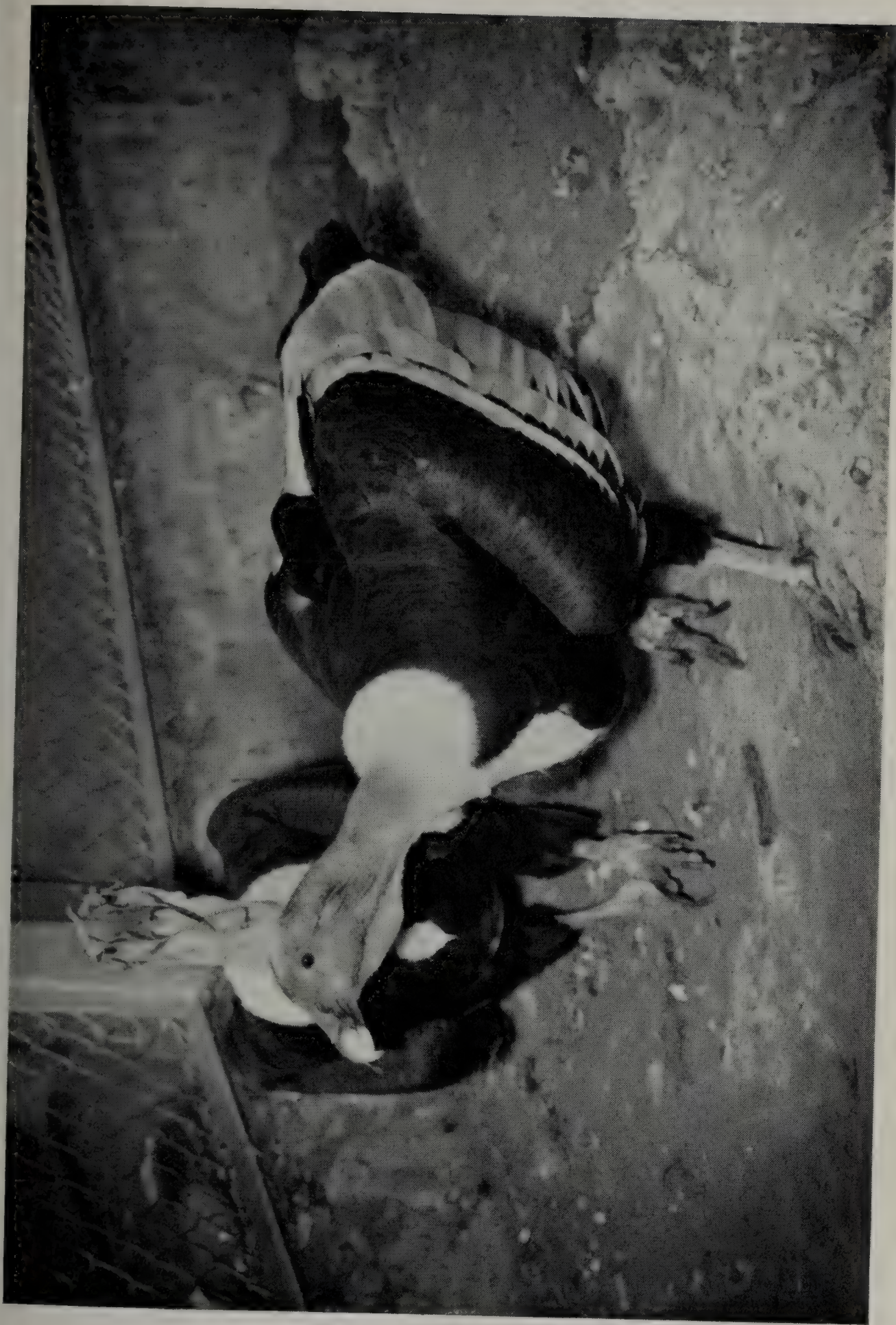
On 21st June, 1947, our breeding pair of Condors hatched their third chick. We were a little disappointed, as this baby was also a male. We removed this bird from the old pair just before nesting time, to see if they would nest in consecutive years.

This strategy did work, and on 20th May, 1948, the fourth baby Condor was hatched, breaking the old precedent that Condors only raise every other year. This baby, our first female chick, was removed from the parent birds when four weeks old, and raised to maturity by hand feeding. Weights and feather growth were recorded weekly, and much was learned in rearing this young bird. The difficulties in the way of field studies would make it impossible to acquire the same knowledge in the wild. We fed one half pound of finely ground liver twice a day, and one half pound of finely ground horse meat twice daily.

On 7th June, 1949, the fifth Condor was hatched, a male, and raised to maturity by the parent birds.

Experimenting in hatching Condor eggs in an electric incubator, we hatched the sixth chick 31st May, 1950. This baby, a female chick, lived seven days. Our breeding pair laid a second egg which hatched 10th July, 1950, also a female chick, which they raised to maturity.





*Copyright]*

*To face p. 22.*

Breeding pair of Andean Condors in San Diego Zoo.

*[San Diego Zoo*





Condor chick. Erect fleshy comb determines sex—male. Hatched in incubator, 23rd May, 1951.



Copyright] [San Diego Zoo  
Thirty-day old Condor chick. Smooth head—female. Hatched by  
To face p. 23. parents, 20th May, 1948.



On 23rd May, 1951, the eighth Andean Condor baby was successfully hatched, this one in an incubator. It was raised to maturity by hand feeding. This male chick weighed six ounces at the time of hatching. Shipped to Liberty Park, Salt Lake City, Utah, at the age of eleven months, the bird weighed 34 pounds. This bird was fed on tenderized food from the time of hatching, without the use of regurgitation as used by the parent birds. To our knowledge this has not been done before successfully in captivity.

Our breeding pair of Andean Condors were purchased, male, 29th June, 1929, female, 3rd March, 1934. The male Condor was 14 years old when the first egg proved to be fertile. The female was 10 years old when the first egg was deposited.

Complete record, 1942-1952.

1. 8th July, 1942—First baby—male.
2. 8th June, 1945. Second baby—male.
3. 21st June, 1947. Third baby—male.
4. 20th May, 1948. Fourth baby—female.
5. 7th June, 1949. Fifth baby—male.
6. 31st May, 1950. Sixth baby—female, died at 7 days.
7. 10th July, 1950. Seventh baby—female.
8. 23rd May, 1951. Eighth baby—male, incubator baby.

We are certainly proud of this fine record in rearing this particular bird of prey, and would like to establish the incubation period of 56 days for all eight hatchings in the Zoological Gardens of San Diego.

\* \* \*

## NEWS FROM THE ZOOLOGICAL GARDENS OF WASSENAAR, HOLLAND

By G. DE GOEDEREN (Amsterdam, Holland)

In the zoological park Dierenpark "Wassenaar" a new large bird-house is being built and will be the home of the zoo's interesting collection of birds, about which I had the honour to inform our members in the AVICULTURAL MAGAZINE of July-August, 1951.

The birdhouse, which will be opened in spring of 1953, is a large glass construction measuring over 400 feet in length with a width of over 60 feet and a maximum height of 21 feet. The President of the Society, Mr. P. W. Louwman, was kind enough to give me a rough outline of the plans of the internal construction of this large building.

From what I saw of the great aviaries which are now under construction in the building, I expect that when everything is completed this birdhouse will be not only the most beautiful but will also guarantee the most appropriate housing for the bird collection of this zoo.



Over 100 enclosures of varying size are expected to be filled with a considerable variety of rare birds, such as : Quetzals, Cock of the Rock, Birds of Paradise, Greater Hornbills, Toucans, Crowned Pigeons, a considerable number of Parrakeets and Lorikeets, and an abundance of other birds.

The aim is to give the spectator a view of the birds in natural surroundings, but in this the management has given more attention to the actual biological needs of the birds than to purely ornamental adornments, which are so often advertised as natural surroundings, but which are very often only very poor imitations and generally do not fulfil the most elementary demands of practical birdkeeping.

From what I saw I am quite sure that the Louise Hall (named in honour of the late Mrs. L. Louwman-de Brey, mother of the President) will be an achievement, which will be greeted with enthusiasm by all aviculturists and which no doubt will attract much attention.

\* \* \*

## COMPARATIVE STUDIES ON THE BEHAVIOUR OF ANATINÆ

By Dr. KONRAD LORENZ (Dulmen in Westfalen, Germany)

Reprinted by kind permission from *Journal für Ornithologie*, 1941.  
(*Festschrift Oskar Heinroth*)

Translated by Dr. C. H. D. Clarke, Division of Fish and Wildlife, Ontario, Canada

(Continued from Volume 58, page 184)

### XVII. THE WIGEON AND THE CHILOË WIGEON

*Mareca penelope* (L), *M. sibilatrix* (Poëppig)

#### A. GENERAL.

Both species are only being mentioned as a kind of appendix as I do not know them nearly well enough. Both, through the lack of a social play and through their highly specialized method of pair formation, which in *M. sibilatrix* is quite reminiscent of that of the Anserinæ, stand out sharply from the pattern of the rest of the surface-feeding ducks. The following facts are important taxonomic characteristics which separate both species sharply from other Anatinæ : (1) the almost uniform colour of the plumage of the female *M. penelope* which completely lacks the lengthwise marking so widely prevalent on the flight feathers ; (2) the dark chestnut-brown summer plumage of



the drake ; (3) the showy plumage of the female with green feathers on the head, found only in *M. sibilatrix* ; (4) the colour of the ducklings, whose heads are almost entirely of one colour with no long stripes.

#### B. THE NON-SEXUAL REACTIONS AND NOTES.

Conversation and call-notes of both sexes are strangely reduced. The female *M. penelope* has really only one call, a whirring "Rerrr", to which there corresponds in the South American female a deeper "Arrr". The drakes of both species have entirely lost all calls and are dependent upon their highly specialized courtship-whistles for all audible utterance. The whistle which is most commonly heard in the European species consists of one syllable, something like "W i i rrr", and in *sibilatrix* cocks it is composed of two syllables and sounds something like "W i b urrr". Both use the whistle as a call and as a warning. It is uttered just the same, for example, when a cat sneaks past as when a female flies over the pond.

#### C. THE SEXUAL REACTIONS AND NOTES OF BOTH SEXES.

In both species these are combined in a ceremony, composed of inciting

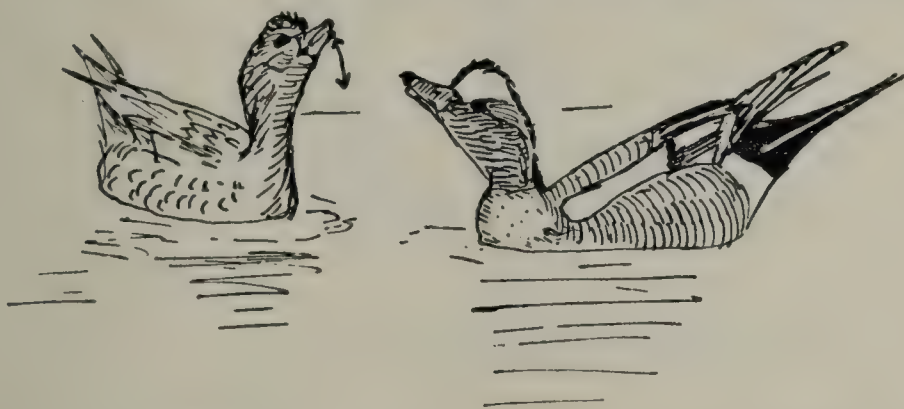


FIG. 44.—The mutual chin-lifting of the Wigeon pair, *Mareca penelope* (L). The little arrow indicates the direction and the degree of the trembling, vertical, inciting movement of the hen. Compare Figs. 3, 32, 42, and 45. Notice the differentiation of the plumage on the front of the drake's head.

and chin-lifting together, which is certainly homologous to that of the Gadwall. It is interesting to note that in *M. penelope* there is a slight indication of the introduction to display, a thing which I have never seen in *sibilatrix*. The drake swims to the female uttering a two-syllabled sound, which is expressed best by the English name of the duck, "Wigeon." He shakes his head in a brief introductory movement and follows it with a very meticulous mock-preening, which the duck sometimes answers with the same movement. For the most part she begins with her peculiar trembling, jerky chin-lifting, whereupon the drake, with the base of his neck sunk deep in the water, at the same time sets up a synchronous chin-lifting which is not repeated in a trembling movement, like that of the hen but is performed only once and is linked with a loud whistle (Figs. 44 and 45). The whirring



sound made by the female, which accompanies the continuous chin-lifting, in which a great number of upward movements are suggested, is, in its accentuation, to be considered a very aberrant form of the inciting of other surface-feeding ducks, and sounds like an apparently continuous "errr". The position she takes corresponds to that of inciting. The female of *M. sibilatrix* lacks the tremulous repetition in its head movement, both sexes lifting the chin with a single movement before which the bill is tipped slightly downward. Like the plumage of the female, her courtship movements are drake-like. The voice of the female sounds deeper, more like "arr", and the whistle of the cock is a two-syllabled "wiburrrr". In the two species the movements and notes of both mates are so well co-ordinated that the whole very peculiar sound pattern sounds very simple. Naumann, as we know, ascribes both sounds, the whistling and the whirring, to both sexes of the Wigeon. The ceremony has throughout the character of a true triumph-cry, whose function is quite similar to that of the triumph-cry of the Anserinæ and Casarcinæ. Therefore I rather suspect



FIG. 45.—The mutual chin-lifting of the pair of Chiloë Wigeon, *Mareca sibilatrix*. Both mates perform the same movement; the behaviour pattern reminds one in its significance of the triumph-cry of geese.

that there are in the European Wigeon at least some indications of the male's care of the young. For *sibilatrix* the latter has been ascertained.

#### XVIII. MARECA SIBILATRIX × ANAS PLATYRHYNCHOS

##### A. GENERAL.

Although I have hitherto omitted from my discussion the many hybrid ducks that I have already studied and whose behaviour-inventory I might easily have given, I cannot help touching briefly upon the hybrids named above, which I received through Professor Heck's kindness from the Berlin Zoological Gardens, where a full-winged wild Mallard duck has lived for years, mated to a *sibilatrix* drake. Physically the birds were pretty well intermediate between the parent species, although the male had much less of the Mallard drake's colouring than the hybrids Poll (1910) had pictured. Above all he had little green on his head, distributed just as in the Chiloë



Wigeon. The two birds were paired, laid, and brooded sterile eggs every year and flew around freely for years, until the duck flew away in the winter of 1939–40, while the drake, who had survived this bad time, became frightened by my catching the other ducks before my move to Königsberg and stayed away.

B. THE NON-SEXUAL REACTIONS AND NOTES.

These were exactly like those of the Mallard. The drake had both the one- and the two-syllabled call of the Mallard drake, except that his voice was softer and hoarser.

C. THE SEXUAL REACTIONS AND NOTES OF THE FEMALE.

*Inciting.*

This cannot be described more briefly than with the assertion that it was like that of neither the one nor the other parent species, but resembled even to the smallest detail that of the Gadwall. The tendency, inherited from *M. sibilatrix*, to break into chin-raising at every sexual excitement was combined with the urge to perform the inciting act over the shoulder, which the duck had inherited from her mother, with the result that between every two chin-raising there came an inciting movement backwards over the shoulder. As the drake lifted his chin at the same time as the duck, there arose a ceremony which was not very different from that of the Gadwall.

*The Decrescendo Call.*

This was hoarser and broken off shorter than in the Mallard. A nod-swimming was lacking.

*The Prelude to Mating.*

This corresponded to that of the Mallard. However, sometimes instead of this both birds carried out the intention-behaviour of diving away before treading, just like the beginning of play-diving before midday bathing. Unfortunately I do not know whether this diving-away occurs as a prelude to mating in *Mareca*. Heinroth has described something corresponding to this in *Tadorna*.

D. THE SEXUAL REACTIONS AND CALLS OF THE DRAKE.

1. *The General Form of the Display.*

This was peculiarly split in two. On the one hand the drake wooed his duck in the manner of Wigeons; on the other hand he mixed in the company-play of Mallard drakes without bothering about her in the least. Leiner described a corresponding cleavage in the taxes of hybrids of the three-spined Stickle-back which nests on the bottom and the nine-spined Stickle-back which builds up in the water plants.



2. *The Introductory Shaking, Drinking, and Mock-preening.*

These corresponded somewhat to those of the Mallard except that the last-named was much more pronounced, as it is in the Wigeons.

3. *The Grunt-Whistle.*

This, and a very pronounced and frequent down-up movement, together with an intensive chin-raising, were the display actions of the hybrid. A head-up-tail-up was lacking in his case.

4. *The Post-Coital Play.*

This was marked by the omission of nod-swimming, that is to say, the drake, after treading, rose slightly in a manner suggestive of the "bridling" movement and then swam around the duck very leisurely without nodding, but paying much attention to her and keeping the back of his head exactly toward her.

5. *Chin-Lifting.*

This is done in unison and is similar to a triumph-ceremony, corresponding entirely to that of the Gadwall.

## XIX. THE CAROLINA DUCK

*Lampronessa sponsa* (L)

## A. GENERAL.

Here we come to a group which some experts class with the true surface-feeding ducks and others with the Cairininæ. As a matter of fact this quite independent sub-family, which consists of only two genera, *Lampronessa* and *Aix*, is almost midway between the two. Characters which they have in common with the Cairininæ are the following: (a) Certain markings in the ducklings; (b) certain physical characteristics resulting from their living on trees and nesting in holes, such as the very long thigh and, therefore, legs that seem to be very far forward on the body; and also the long broad tail; (c) certain undoubtedly primitive characters in their behaviour. The true Cairininæ, together with the Carolina and Mandarin ducks, are the only Anatidæ which make aiming head movements before flying up, quite like those of birds of prey, pigeons, and innumerable other orders, but quite unlike the pre-flight movements of all other Anatidæ. A further point the genera *Aix*, *Lampronessa*, and other Cairininæ have in common is that the nystagmic nodding of the head, which occurs when the bird is walking does not take place with every step, as in almost all other birds, but in a most unusual and striking manner at every second step; thus, the head always goes forward at the same time as the one leg, which almost gives the impression that the bird is limping. Without doubt the genus *Cairinina* is unusually rich in primitive characteristics, a thing which Heinroth, Delacour, and Boetticher



have already pointed out. The black-white marking of the plumage and the bare face-mask remind one of *Anseranas*. The completely reptilian rape of the female, and the complete lack of pairing can also be regarded as primitive characteristics. Now although *Aix* and *Lampronessa* are undoubtedly highly differentiated forms, very nearly related to true surface-feeding ducks, I prefer to class them fundamentally with the *Cairininæ* in agreement with Delacour and Boetticher.

This group, in spite of its clear relationship to forms rich in primitive characters, contains some very highly differentiated forms, analogous, for example, to the *Herpestoidæ* in the *Carnivora*, in which forms like *Mungos* and *Crossarchus* exhibit a truly insectivore-like primitiveness, while others in their specialization almost intergrade with the completely separate higher group of *Felidæ*, such as the Civet Cat *Viverra*, the Palm Civet *Paradoxurus*, or even the Fossa *Cryptoprocta ferox*.

The Carolina Duck's reactions were exhaustively described by Heinroth in 1910. We shall only give them briefly for the sake of comparison.

#### B. THE NON-SEXUAL REACTIONS AND NOTES.

Except with very small ducklings the two-syllabled conversation call of the *Anatinæ* is lacking. In the whistle of desertion the one-syllabled "piep" call does not sound at the same intervals as in the *Anatinæ* but, especially at moments of high intensity, in couplets, but not so close that they sound like two syllables. We have already spoken of the intention-behaviour for flying away which is distinctive for the whole group. The duck's "go-away" call, which is heard especially when she is looking for the nest, is a soft rapid "tetetetetet". That used by the drake in the corresponding mood is a delicate "jibjibjibjib". As a conversation note the drake utters a short "ji-ib", accented on the second syllable, which one hears especially when he is paying "polite" attention to the duck. The call-note of the drake is a drawn-out "ji-ihb"; the duck's call-note is a more raucous "ku-ack". While the calls noted are analogous in significance to what may also be homologous utterances of many *Anatinæ*, the warning call of the female is a peculiarly short "Huick". As in the *Anatinæ*, the drake's warning call corresponds to the call-note. While these two calls of the *Anatinæ* cannot be distinguished, the drake Carolina's warning call is very clearly recognized by its cut-off brevity.

#### C. THE SEXUAL REACTIONS AND NOTES OF THE FEMALE.

##### 1. *Inciting*.

This takes place in the manner typical of surface-feeding ducks, over the shoulder. Between the separate inciting movements the female



makes caressing movements with her bill towards the drake, especially towards his breast. Mandarin ducks do this in the same manner. On the other hand, the female Brazilian Teal, *Amazonetta brasiliensis*, has a very peculiar inciting behaviour which may perhaps be regarded as derived from the one just described. She first threatens the "enemy" with her neck stretched forward, with her upper mandible raised and her bill open, then turns her head towards her male and performs the typical inciting movement, accompanied by a rasping note, in his direction. Between the inciting movements the female Carolina often moves her head as if aiming which, as in the Carininae, has the significance of a very general excitement gesture.

2. *The "Coquette-Call" (Heinroth).*

This is not a very loud sound. It is difficult to represent in letters but it is something like "houi" and in its function corresponds to the nod-swimming of the Mallard and Chestnut-breasted Teal, i.e. to stir the drake up to the courtship display.

3. *The Flight-Call.*

This is a peculiarly loud "u-ih" corresponding to a long drawn-out and gradually dying call-note. It sounds peculiarly like an owl. No one who did not know it would ever ascribe it to a duck. It is heard especially towards evening and when Wood Ducks fly in over decoys. As lonely ducks are very prone to utter it, it doubtlessly has the additional significance of a decrescendo call. I did not, however, at the time of the first publication of this paper, believe that this note was phylogenetically comparable to the decrescendo call of the Anatinae proper. Better knowledge, acquired but lately at the Severn Wildfowl Trust, has made me change that opinion: the female of the Maned Goose *Chenonetta jubata*, has a decrescendo call which, while quite indubitably homologous to that of the Anatinae, at the same time is so similar to the "owl-note" of the female Carolina that it represents an exact intermedium between both. *Chenonetta* is, in spite of its goose-like bill, a close relation of *Lampronessa* and *Aix*, but in some details of its courtship it shows a closer resemblance to the Anatinae than both of them do. Thus it is not so astonishing that its decrescendo call forms a connecting link between that of *Lampronessa* and that of Anatinae. An interesting difference lies in the fact that the "owl-note" of the female Carolina also denotes the duck's intention of flying away herself which the common decrescendo call of surface feeding ducks certainly does not.

4. *The Prelude to Mating.*

The prelude to mating of the female is, in contrast to all Anatinae, a completely quiet crouching down with extended neck. Ducks often



swim after their unwilling mates in this position for some minutes. On his part the drake shows his intention to mate by repeated drinking and aiming head movements, sometimes even interspersed with mock-preening. The Mergansers, which in Delacour's opinion are closely related to the Carolina-Mandarin group, have almost the same prelude to mating.

#### D. THE SEXUAL REACTIONS AND NOTES OF THE DRAKE.

##### 1. *The General Form of the Display.*

The drake Carolina woos *one* particular female more than any male of the Anatinæ that I know. While the courtship of the Gadwall and Wigeon, with their threatening and annoying of other pairs, reminds one of the courtship of the Anserinæ and Casarcinæ, the display of *Lampronessa* reminds one very much of the display of pheasants, in which the male continually reveals his striking plumage differentiation before the female. There is not the least tendency of the drakes to unite in a social display, which is all the more interesting and striking because this minimum of social play in *Lampronessa* is in direct contrast to a maximum of social play on the part of the closely related *Aix*. The number of different, though for the most part not highly differentiated, behaviour patterns in the drake Carolina is striking. Perhaps this is a primitive condition.

##### 2. *The Introductory Shaking.*

This occurs not very often and only in one particular situation. That is, when the drake, while in a state of "lazy" restfulness and of "low motivation" concerning courtship activities, finds himself suddenly confronted by his female. The rising of "courtship mood" finds its expression in a repeated shaking of the head exactly similar to the initial shake of Anatinæ. Very frequently it is combined with drinking.

##### 3. *Mock-Preening.*

This regularly follows drinking, especially at a high reaction-intensity. As with *Aix* it never occurs without the preceding drinking. However, in *Lampronessa*, in contrast to *Aix*, there is drinking in moments of lesser intensity but this is not followed by mock-preening. In mock-preening the drake Carolina reaches deep behind his wing. As rapid as the movement is I have a clear impression that he touches and moves one particular feather on the underside of the wing, which Heinroth calls the "brass-feather". Because of their extraordinarily short time of reaction birds have a great number of optically-effective releasers whose exposure is too brief for human observation. One thinks of the Mallard drake's fountain already described, which was revealed to us only through the short exposure time of the camera.



4. *Burping.*

This is rather rare in the drake Carolina. It is doubtless homologous to that of the Anatinae and the Mandarin drake. The accompanying sound, a whistling-sneezing "Pfit" sounds very different from the long drawn-out "Pfrrruib" of the Mandarin. The



FIG. 46.—The burp of the drake Carolina, *Lamprolaima sponsa*. The disk-set is very effective visually because of white lines on the edge of the forehead and through the lengthening of the feathers. Compare Figs. 20, 24, 35, 39, and 50.

movement of the hood, which is seen particularly in this movement, is the same in both species. The edge of the "disk set", already mentioned, protrudes sharply, while the feathers of the back of the head, which are partly white and elongated, form a long veil, giving the bird its German name (bride duck) (Fig. 46).

5. *The Down-Up Movement.*

This is homologous to that of the Anatinae only because it has certainly arisen from a drinking through mimic-exaggeration. After the bill has been briefly tipped downward it is thrust up

almost to a vertical position, during which the drake utters a short whistle. A loose connection between this act and that of chin-lifting shows that both have probably the same origin.

6. *Chin-Lifting.*

Chin-lifting itself is connected with the turning of the back of the head (Fig. 47) just as it is in the solicitous Mallard drake. With the drake Carolina, too, the plumage on the back of the head is laid flat so that the surface turned to the duck shines, not like the Pintail and the Gadwall drakes, or in the Mallard's second turning, where it is striking because of its lustreless black. Something else happens with the drake Carolina's head feathers, in that the hood is not only depressed tightly against the neck, but at the same time it is spread to the side so that the surface turned toward the female is considerably widened and appears shiny green edged with white (Fig. 47). This turning of the back of the head is one of the most frequent of the drake's display acts, and in it the drake is almost constantly showing solicitude for his duck. At the same time, a second plumage differentiation comes into play. The drake, swimming before his duck, turning the back of his head to her and constantly uttering the short "jiib . . . jiib . . . jiib", turns his tail sideways toward her. The tail is held high so that the deep purple-violet side, with the orange-red plumes in the shape of a sickle hanging to it, is also turned to the duck, as



is the spread-out back of the hood (Fig. 47). With the drake Carolina every little detail of a plumage so rich in special differentiations is used, so to speak, in a special ceremony effective optically as a "visual adaptation" in the Söffert sense, or "releaser" in the Lorenz sense. As the drake cannot turn his tail at right angles while he is turning the back of his head and showing the side of his tail, he swims in front of the duck quite obliquely "from the shoulder" always directed exactly so that the purple surface comes vertically

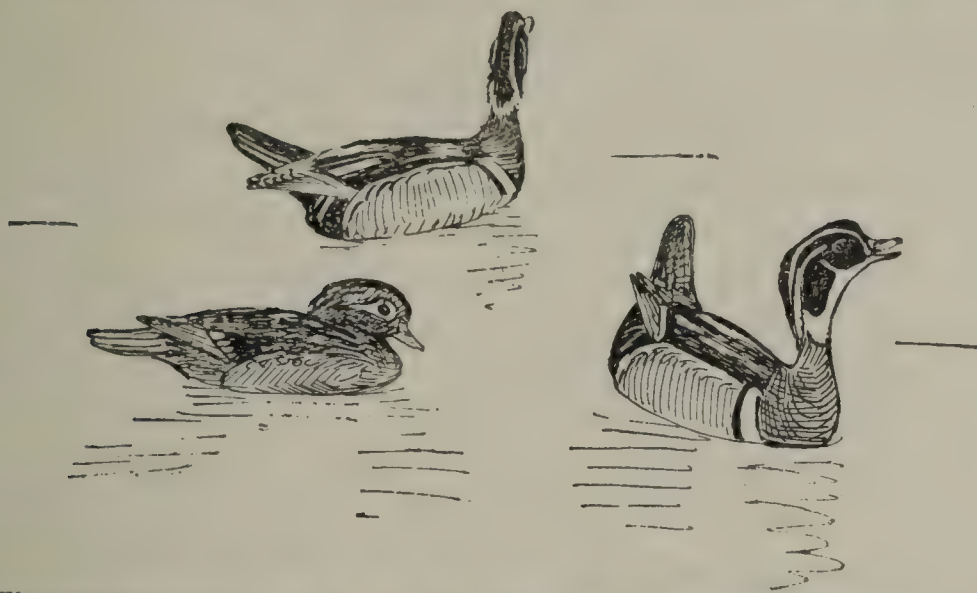


FIG. 47.—The turning the back of the head of the drake Carolina, with chin-lifting, and a slanting position of the tail. The white-edged surface of the "bride's veil" as well as the violet side-surface of the base of the tail, ornamented with orange-yellow down, are turned toward the duck courted, so that they are directly in her line of vision.

into the duck's line of vision. He often changes from right to left and left to right. Each time the tail shifts from one side to the other.

#### 7. *The Whistle-Shaking.*

I purposely do not designate this action as a grunt-whistle because I believe it is homologous to that only in so far as both arise from the introductory shaking. On the other hand this very behaviour of the drake Carolina, because it is far nearer the original form of shaking than is the grunt-whistle of the Anatinae, is to me the most convincing evidence of the correctness of our view concerning the phylogenetic derivation of the latter. In the Carolina, even the completely autochthonous, mechanically effective shaking begins with a lowering of the head almost to the breast, so that the upward thrust which follows reminds one of the grunt-whistle movement of the Anatinae, just like the "display-shaking" of the male *Tadorna tadorna*. The "whistle-shaking" of the drake Carolina compared to the "true" shaking of the duck is only slightly, although noticeably, mimic-exaggerated, but in combination with the linkage to an introductory shaking, the fact that the drake utters a whistle exactly at the right place makes up a continuous chain of evidence for the theory that the



grunt-whistle of the *Anatinæ* has come from a similar shaking. The whistle-shaking of the drake Carolina is comparatively rare.

#### 8. *Male Inciting.*

The drake Carolina is the only male among the *Anatinæ* I know that has a symbolic threatening behaviour completely like the inciting behaviour of the female. Especially when he is being incited by the duck, and clearly as an answer to her the drake thrusts his head over his shoulder sideways as though threatening an "enemy". At each thrust he utters a soft "dih".

#### 9. *The Combat of the Drakes.*

This is marked by the fact that the bill is not used as a weapon of attack. Drakes shoot like a flash over the water beside each other and hit with the shoulders of the wings without ever seizing the other with the bill. In *Lampronessa* this shooting ahead has become "ritualized" as an independent form of display. The drakes often shoot up to the duck they are courting in the same way, or shoot back to her after chasing off another drake. Even old females carry out this behaviour for their drake. Then both birds shoot along beside each other like fighting drakes but the next moment the ceremony changes into the turning of the back of the head and expressions of good will.

#### 10. *The Post-Coital Play.*

Not marked by any special behaviour. While the female has already begun her bathing the male launches forth into intensive acts of "politeness".

(*To be concluded*)

\* \* \*

## THE SEVERN WILDFOWL TRUST—NOTES ON THE BREEDING SEASON 1952

By S. T. JOHNSTONE (Slimbridge, Glos., England)

This year, 72 species of waterfowl nested at the New Grounds, and representatives of 58 species were reared. Among the more interesting were Southern Red-billed Whistling Duck (nomenclature from *Key to the Wildfowl of the World*, by Peter Scott), White-faced Whistling Duck, Coscoroba Swan, Hawaiian Goose, Orinoco Goose, African Red-billed Pintail, Hawaiian Duck, Argentine Red Shoveler, Cape Shoveler, Brazilian Teal, Goosander, and North American Ruddy Duck.



## HAWAIIAN GOOSE

A male and two females of this species were presented to the Trust by Mr. Herbert Shipman, of Hawaii. Both females laid in 1951, but owing to the late arrival of the male, the eggs were infertile. The 1952 season has proved more successful.

The first egg was laid on 18th February and four clutches were completed, totalling 19 eggs. Fourteen were set under Silkie × Buff-Rock hens, 9 of which were fertile and duly hatched. The incubation period varied from 29 to 31 days. The last clutch of five eggs was left under the parent goose, and although she did not desert, incubation must have been faulty. On the 28th day the eggs were found to be cold and subsequent examination proved that three fertile eggs had ceased to develop at an early stage.

An inch of snow covered the sitting boxes when the first goslings hatched and for four days they were kept in a warm brooder. Although three were very weak, all nine survived and are now fine healthy birds.

In addition to grazing, the birds fed well on a mash consisting of biscuit, fresh egg, and dried milk. Both watercress and milk thistle were supplied, the former being eaten in large quantities.

## COSCOROBA SWAN

A pair of these birds laid one infertile egg in 1950 and commenced nesting in 1951, but were driven from their territory by a Grey Lag Goose.

In 1952 nest building started during the second week in January and in all, three nests were constructed. Both birds built, the male playing the greater part. The first egg was laid on 16th March and the clutch of four completed by the 21st. The female was at first allowed to incubate and during this period one egg disappeared. Meanwhile the male was particularly aggressive to other occupants of the pond and it was decided to remove the remaining three eggs which were transferred to a broody Silkie. One of these proved to be infertile and one addled, while the third hatched successfully on the 35th day.

The downy pattern of the young bird superficially resembled that of a Sheld-Duck, but with the characteristic head markings of a Tree duckling.

After fourteen days the "cygnet's" legs appeared to be underdeveloped and rachitic, and a course of calcium lactate and parathyroid extract was administered. The bird duly recovered and feathering was complete in three months.

Apart from the usual duckling mash, plenty of duckweed was supplied, together with a daily helping of dried ants' eggs.



## NEWS FROM FINLAND

By C. AF ENEHJELM (Helsingfors, Finland)

I recently obtained a fine pair of Hawk-headed Parrots, but unfortunately lost the male—I believe. It was a great pity as I had hoped to try my hand at breeding them later on. I also received nine Quaker Parrakeets, apparently a very small subspecies, which I shall try to breed in the pheasantry next year.

Other new arrivals are a pair of Rock Pebbles, two pairs of Red-faced Lovebirds, an imported Bourke cock (I now have two pairs), five Bichenow Finches, and a pair of Quail Finches.

It has really been a very poor breeding season. About twenty Fischer's and three Peach-faced Lovebirds bred in the pheasantry. Abyssinians were sitting on two eggs on 1st December, but as it was very cold I had to take them inside.

For some reason it has been a Zebra Finch year. I have never been so successful with them. I have bred many normals, whites, fawns, and cinnamons. The only ones which refused were two pairs of a new mutation, with pure white underside, and without zebra markings. Last year I had a pair from Raymaekers and got two youngsters (a pair) from them, and of the same colour. This year neither pair did anything. A cock paired to a white hen gave me three cocks, normal-coloured. I bred lots of Indian Silverbills, and about ten Modest Finches (Plumheads); also some Cordon Bleus and Avadavats.

I have a very reliable strain of Painted Quail, and reared seven young from two pairs. I have not bred any birds of prey this year. As to parrot records, one of my friends in Denmark, H. Carlsson, bred one Abyssinian Lovebird: and with another friend, W. Langberg, one of the most experienced aviculturists in Denmark, a pair of Red-faced laid three eggs in a Budgerigar box and sat for some time—one egg was fertile. The pair was kept in a box-cage 30 inches by 15 inches by 20 inches in his birdroom.

\* \* \*

## LONDON ZOO NOTES

By JOHN YEALLAND

During his stay in Uganda Mr. Lester, the Curator of Reptiles, paid a brief visit to Ruwenzori where, in the bamboo forest at about 8,000 feet, he succeeded in catching a pair of Regal Sunbirds (*Cinnyris regius*) and an immature Uganda Buff-breasted Sunbird (*C. venustus igneiventris*).

These Regal Sunbirds must be the first to reach Europe alive. From the Entebbe area he collected five Red-chested Sunbirds (*Nectarinia*



*erythroceria*), also new to the collection, and a pair of Harlequin Quail (*Coturnix delagorgei*). There are now twenty-four forms of African Sunbirds in the collection.

Another bird new to the collection is the Scarlet-bellied Senegal Parrot (*Poicephalus senegalus versteri*) presented by Mr. Prestwich. The Red-vented Parrot is another name for this bird, but neither is really appropriate, the relevant area being a deep orange rather than red, but the Orange-bellied of Bannerman is *P. s. mesotypus*, an intermediate form. A good coloured plate of *P. senegalus* and *P. s. versteri* is to be found in Bannerman's *Birds of Tropical West Africa*, vol ii, plate 15.

A pair of Razor-billed Curassows (*Mitu mitu*) have been presented by the Antwerp Zoo ; a pair of Indian Green-winged Doves (*Chalcophaps indicus*), and an American Wigeon (*Anas americana*) have been received in exchange.

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## BRITISH AVICULTURISTS' CLUB

The thirty-sixth meeting of the Club was held at the Rembrandt Hotel, Thurloe Place, South Kensington, S.W. 7, on Wednesday, 14th January, 1953, following a dinner at 7 p.m.

Chairman : Dr. F. B. Lake.

Members of the Club : Mrs. J. R. Alderson, Miss P. Barclay-Smith, H.G. the Duke of Bedford, Miss K. Bonner, Mrs. V. M. Bourne, W. Brain, Captain A. Clarence, G. T. Clark, Mrs. G. T. Clark, T. Crewes, A. H. D'Aeth, W. T. Dring, O. E. Dunmore, Miss S. A. Fothergill, T. Goodwin, H. J. Harman, H. J. Indge, F. T. Jones, Miss E. M. Knobel (Club Hostess), J. W. Lester, A. F. Moody, G. S. Mottershead, S. Murray, K. A. Norris, S. Porter, A. A. Prestwich, D. M. Reid-Henry, D. H. S. Risdon, R. C. J. Sawyer, E. N. T. Vane, H. Wallace Wood, J. J. Yealland.

Guests : Dr. K. W. Aylwin-Gibson, J. Bailey, Miss J. Crone, S. A. Croucher, F. G. M. Daulman, Mrs. W. T. Dring, Miss H. Gentry, Miss S. Goodwin, M. A. Lake, Miss P. Lawford, Mrs. J. W. Lester, D. M. Love, W. Love, M. Luther, Mrs. N. Masters, Mrs. S. Murray, J. G. Reincke, J. Targett, Miss M. White, Mrs. R. Winton.

Members of the Club, 33 ; guests, 20 ; total 53.

Before dinner members stood in silence for a few moments as a mark of respect to the memory of Madame Jeanne Derscheid.

The Chairman drew attention to the Red-sided Eclectus Parrot family exhibited by H. J. Indge. This consisted of the parent birds and a young male, believed to be the first bred in Great Britain.

The Chairman introduced the speaker for the evening, Mr. F. G. M. Daulman, of Imperial Chemical Industries, who then showed the



sound colour film "Control of Coccidiosis". This film, while primarily produced for the benefit of poultry-keepers, contained much of great interest to the aviculturist. A book of the film is available, free to members, on application to the Hon. Secretary.

The Duke of Bedford, Edward Vane, Terry Jones, Ken Norris, John Yealland, and D. M. Reid-Henry took part in the discussion that followed—Mr. Daulman very ably dealing with all questions. The Chairman gave a concise summary, and the spontaneous applause indicated that the proceedings had proved of considerable interest.

The next meeting of the Club is on **11th March, 1953.**

ARTHUR A. PRESTWICH,  
*Hon. Secretary.*

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## NEWS AND VIEWS

Miss Phyllis Barclay-Smith and Jean Delacour have been elected Corresponding Members of the South African Ornithological Society.

\* \* \*

The two Eagle-Owls bred at Dudley Zoo last year were European, *not* Virginian as stated in *A.M.*, 1952, 188.

\* \* \*

Kenneth Smith has been appointed Superintendent of the Paignton Zoological and Botanical Gardens. Members will be glad to hear that one of his chief aims is to increase the representation of bird species and avicultural interest in the Gardens.

\* \* \*

Carl Johan Olsson, Gothenburg, Sweden, reports he has had a good breeding season: "I have had youngsters from Pigmy Doves, White Javas, White, Grey, Pied, and Fawn Zebras, Green Avadavats, Golden-breasted Waxbills, Cordon Bleus, Fire Finches, and Ruficaudas."

\* \* \*

The importation of Parrots into Eire is now allowed provided certain regulations are observed. These birds are liable to a maximum period of six months' quarantine in the Dublin Zoo. Particulars may be obtained from the Superintendent, The Royal Zoological Society of Ireland, Phoenix Park, Dublin, Eire.



It is quite probable that Dr. Alan Lendon will be in England during the summer. He writes : " I hope to arrive in August and stay till about November or December. I shall look forward to meeting you and renewing my acquaintance with others whom I met in 1940-41. I hope to have time to see several zoos and private collections both in England and in America on my way home, although my trip is, of course, primarily surgical in nature."

\* \* \*

H. J. Indge writes : " I am pleased to say the baby Eclectus left the nest after several days peering out, on Saturday, the 22nd November. He is as well-grown as an adult, the only difference being a darker shade of green, and with a smudged bill. It was an extremely cold day, and as I was going to the Olympia and feared he would not go back to the nest, I transferred the whole family to a flight cage in the birdroom, where they appear to have taken no notice of the change and seem to be doing well."

\* \* \*

W. R. Carthew, Vereeniging, South Africa, owns a very extensive private zoo. In a recent letter he says : " The Quakers now have a large nest, but I am sorry to say I have only just discovered they are the worst cannibals I know. They are in a very large aviary where there are, or rather were, many other birds, doves and pheasants, etc., until last night. I had been finding numerous birds and pheasants just in pieces as if attacked by a swarm of rats, nothing left except feathers. I had put all this down to vermin which I had failed to locate. But last night I caught them with a Tambourine Dove. They actually ate all the flesh and carried all the bones to their nest where they broke them up. On further examination of the nest I was horrified to see what those parrakeets had done. The nest was literally crammed with bones, finely broken up and cleaned as no animal would."

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#### WATERFOWL RINGING SCHEME—DETAILS OF RECOVERIES

<i>Date ringed.</i>	<i>Species.</i>	<i>Ringed by.</i>	<i>Date recovered.</i>	<i>Place where recovered.</i>
18.7.1950	Blue Snow Goose ♀	John Berry (Newport— Fife)	Oct., 1952	Auchterarder, probably shot.

A Snow Goose carrying the Society's ring was shot on 12th October, 1952, at the Lake of Lough Gur, Kilmallock, Co. Limerick. The boy who shot it became frightened at the approach of our informant and ran off before the number of the ring could be ascertained.

A. A. P.

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## REVIEWS

KING SOLOMON'S RING. By KONRAD Z. LORENZ. Messrs. Methuen and Co., Ltd., London, 1952. Price 15s. net.

Dr. Konrad Lorenz's work on animal behaviour is well known and his book, *King Solomon's Ring*, is one that everyone interested in natural history will wish to possess. It is an account of his observations, adventures, and experiments with his many animal companions, both pets and in the wild, at his home at Altenberg, near Vienna, and contains much information on animal psychology of great value, his observations on birds being of particular interest. In the chapter "Pitying animals" Dr. Lorenz stresses that sympathy for animals in captivity is in most cases entirely wasted but some aviculturists may not agree with his contention that Parrots and Cockatoos are unhappy prisoners in cages.

The book is written with that inimitable humour typical of Lorenz, which has in no way been lost by the translation, and is a delight to read. The many pen-and-ink sketches by the author with which the text is interspersed add greatly to its charm.

P. B-S.

ENJOYING THE COUNTRY. By E. FITCH DAGLISH. Messrs. Faber and Faber, London, 1952. Price 18s. net.

Mr. Fitch Daglish opens his book with a chapter on the best means of enjoying the countryside and what to do and what not to do to get the fullest enjoyment. He then takes his readers through the seasons of the year, giving much information and telling them in a clear and interesting manner what they should look for. As he says in his first chapter, in nature's year it is difficult to know where to start as January brings no significant change in the lives of our wild animals or plants. He comes to the conclusion that it seems rational to think of nature's year, like the farming year, as beginning with autumn and as reaching its finale in late summer. He therefore begins with bird movements in autumn, followed by "autumn colour", and "spider time" and continues through the seasons to high summer. There is much about birds in the book, in fact they claim the major part of the author's attention. The black and white illustrations are of the usual high standard expected from Mr. Fitch Daglish.

P. B-S.

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## NOTES

## CORRIGENDA.

Volume 58, No. 6. Page 208, line 8, for *inhibit freezing* read *inhibit fleeing*. Page 213, line 21, for *homosexually* read *heterosexually*. Page 216, line 11, for *they are* read *there are*.



## BREEDING BLUE MASKED LOVEBIRDS 1952

At the beginning of the season I had in my possession two pairs of Blue-bred Masked, two pairs of Blue Masked which I imported from the Continent in July, 1951, and one pair of Blues which I bred from a Blue-bred pair in 1951.

The Blue-breds consisted of one 1949 bred pair and one 1950 pair. The 1949 pair produced one Blue and one normal from the first nest. A second nest consisting of two Blues and two normals contracted some complaint, possibly coccidiosis, at about ten days and passed out. A third nest of fertile eggs failed to hatch out.

The 1951 pair of Blues, which turned out to be a true pair (brother and sister) had one nest of clear eggs and made no more attempts at breeding. I hope for better results next year from this pair as they are a fine, large, and vigorous pair of a size equal to imported normal Masked.

One of the imported Blue pairs went to nest and laid the first egg on 8th June, producing five eggs all of which proved to be fertile. The first egg hatched on 1st July and three others followed. A budgie nest-box was used with a layer of sawdust on the bottom and no moisture devices resorted to. Four strong birds were reared which are now hardly distinguishable from their parents and all are of a size equal to wild specimens. The old pair did not go to nest again until October and laid the first egg on 5th October, producing five eggs, all of which proved to be fertile. The first egg hatched on 29th October and two more followed, the last two eggs failing to hatch. Three strong birds are now commencing to fly and have withstood the recent cold spell in an outdoor aviary.

The second pair of Continental Blues have so far failed to breed but I am still hoping they will do so next year.

To sum up, I have bred eight Blues this year which together with my six Blues at the beginning of the season makes my total of Blues fourteen and puts me in a strong position for next season. At the same time I also have two blue-bred pairs. Incidentally, I find the Blues hardier, if anything, than the normals.

A. D. CAMPEY.

## THE NATIONAL SHOW

The National Show continues to expand, the foreign exhibits this year approached the 400 mark, requiring the services of four judges. It was organized in conjunction with the Poultry Show, and entries to both sections were complementary to each other. No doubt many visitors found this a very acceptable arrangement.

There was a notable increase in the number of "Trade Exhibitors", which indicates that there is a growing realization of the importance of this Show as an annual venue of all bird lovers. As usual the organization worked with general efficiency. The only criticism overheard was with regard to the lighting during the evening in the gallery where the foreign section was situated. During the day, however, there was no justification for any dissatisfaction on this point.

With the removal of the ban on the importation of Parrots, a greater number and variety of these birds was expected, but it takes time to convert newly imported birds into show specimens of national standard, and now that the ban is to be reimposed, this anticipated increase may never materialize. There was a large entry in Lovebirds, an excellent pair of Abyssinian taking first place; other species represented were Red-faced, Fischer's, Masked, and Peach-face. Several good exhibits were entered in the classes for Australian and Asiatic Parrakeets, a few South American specimens were also on view after many years' absence, but only one pair of Australian Grass Parrakeets—Elegants—put in an appearance. The class for Lories and Lorikeets was interesting, as it contained Mr. Williams' pair of Yellow-backed Lories, awarded best Parrot-like, also a pair of Musshenbroek's Lorikeets, probably the first ever benched, also an Ornate, a Forster's, and a pair of Swainson's. Other notable entries were Mr. Sawyer's Salmon-crested Cockatoo and a fine hybrid Macaw *militaris* × *ararauna*, and also a hybrid Pennant's × Goldmantled-Rosella.

The entry of small seed-eaters was enormous, several classes containing some thirty contestants. The quality throughout was good, the margin of difference between first and last being narrow. Among the most interesting were Mr. Sawyer's Green Twin-spots, best seed-eater—an outstanding Pin-tailed Nonpareil, a nice pair of Jackson's Wydah, several of the rarer Waxbills, Violet-eared, Dufresne's, and Black-cheeked.



The opening class among softbills was indeed exceptional, there being no less than 15 entries of Sunbirds and Humming Birds. Mr. Sawyer's Ruby and Topaz taking first prize, also the best foreign exhibit and supreme champion of the Show. Not content with that, Mr. Sawyer also took second and third prize in this class, with a pair of Amethyst Sunbirds, and a pair of Pucheran's Emerald Humming Birds. He repeated the performance in the next class, for small Tanagers and Sugar Birds, with a team of Black-headed, Yellow-winged, and Blue Sugar Birds. All these exhibits were faultlessly staged in most tastefully decorated surroundings.

One or two less common Tanagers, absent for many years, put in an appearance once more. There were also some beautiful Robin Chats, Starlings, and Thrushes, several Toucans and Touracos. No less than four Wilson's Birds of Paradise and a pair of Twelve-wired, Fairy Bluebirds, Pittas and Manakins, besides many other interesting exhibits too numerous to mention. Altogether a most excellent exhibition.

E. N. T. VANE.

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## CORRESPONDENCE

### NESTING SITE OF *ERYTHRURA PSITTACEA*

Few, if any, books supply details regarding this. I am indebted to our member, Mr. Tom Goodwin of Ripley, for informing me that when he was collecting in New Caledonia in 1937 that a local French farmer accompanied him to show him where they nested. On approaching the spot he was shown a dozen or more nests, some with young in them. To his surprise they were situated in holes and crevices among rocks and quite near each other. Incidentally, he made an examination of the trees in the vicinity which were numerous but only three to four inches in diameter and perfectly sound. In a wild state these birds apparently nest in small colonies.

BIRDSACRE, LLANTARNAM, MON.

A. SILVER.

### RISKS INVOLVED IN REMOVAL OF NESTING-BOX OF TURQUOISINE PARRAKEETS

The Duke of Bedford has the welfare of Grass Parrakeets so much at heart that I am surprised he should advise people not to let Turquoisines have three nests in succession, without first giving his readers *some* word of warning as to the grave risk of injury to the newly-fledged second brood if any attempt is made to remove the nest-box before the third clutch is just on the point of hatching.

The reason for this is that, unlike newly-fledged budgerigars—who just sit and look at you while you remove the nest box—newly-fledged Turquoisines are quite the wildest things imaginable, and remain so for at least a fortnight, with the result that if you are foolish enough to enter their aviary during this period you will be lucky indeed if they sustain no more serious injury than bleeding ceres and broken tail-feathers. Furthermore, by the time it is safe to enter the aviary and remove the nest box the hen will have been incubating her third clutch for more than a fortnight, as hen Turquoisines usually lay and start to sit several days *before* the youngest member of the previous brood leaves the nest. Incidentally I may say that I have on more than one occasion discussed with the Duke this problem of preventing a hen Turquoise going to nest for a third time in succession, but he had no solution to offer.

For those who, like myself, find themselves quite incapable of light-heartedly throwing away clutches of just-hatching Turquoise eggs, and finally decide to leave their mother to hatch and rear them, I have, I am glad to say, a grain of comfort to offset the Duke's gloomy prognostication as to the dire results of such folly.

We have a hen Turquoise at Keston who insists upon going to nest three times each season, and during the past few years has reared a large number of most excellent young ones. According to the Duke's theory this bird should certainly have died of exhaustion by now, yet, strange to say, she remains in what can only be described as rude health to this day. I touch wood as I write this, because, of course, she *may* suddenly get ill and die to-morrow; but this, as we all know, is liable to happen to any of one's birds, quite irrespective of the size or number of the broods they may, or may not, have reared in the past.

BRAMBLETYE, KESTON, KENT.

EDWARD BOOSEY.

(The Editor does not accept responsibility for opinions expressed in articles or correspondence.)



## CANDIDATES FOR ELECTION

- W. BOOTH, Regat House, Lower Leigh Road, Daisy Hill, Westhoughton, Nr. Bolton, Lancs. Proposed by Miss K. Bonner.
- H. G. BRIDEAUX, Haigh-Moor, La Rocque, Jersey, Channel Islands. Proposed by Miss K. Bonner.
- W. BROADBENT, 13 Pine Grove, Southport, Lancs. Proposed by Miss K. Bonner.
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# AVICULTURAL MAGAZINE



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Founded 1894

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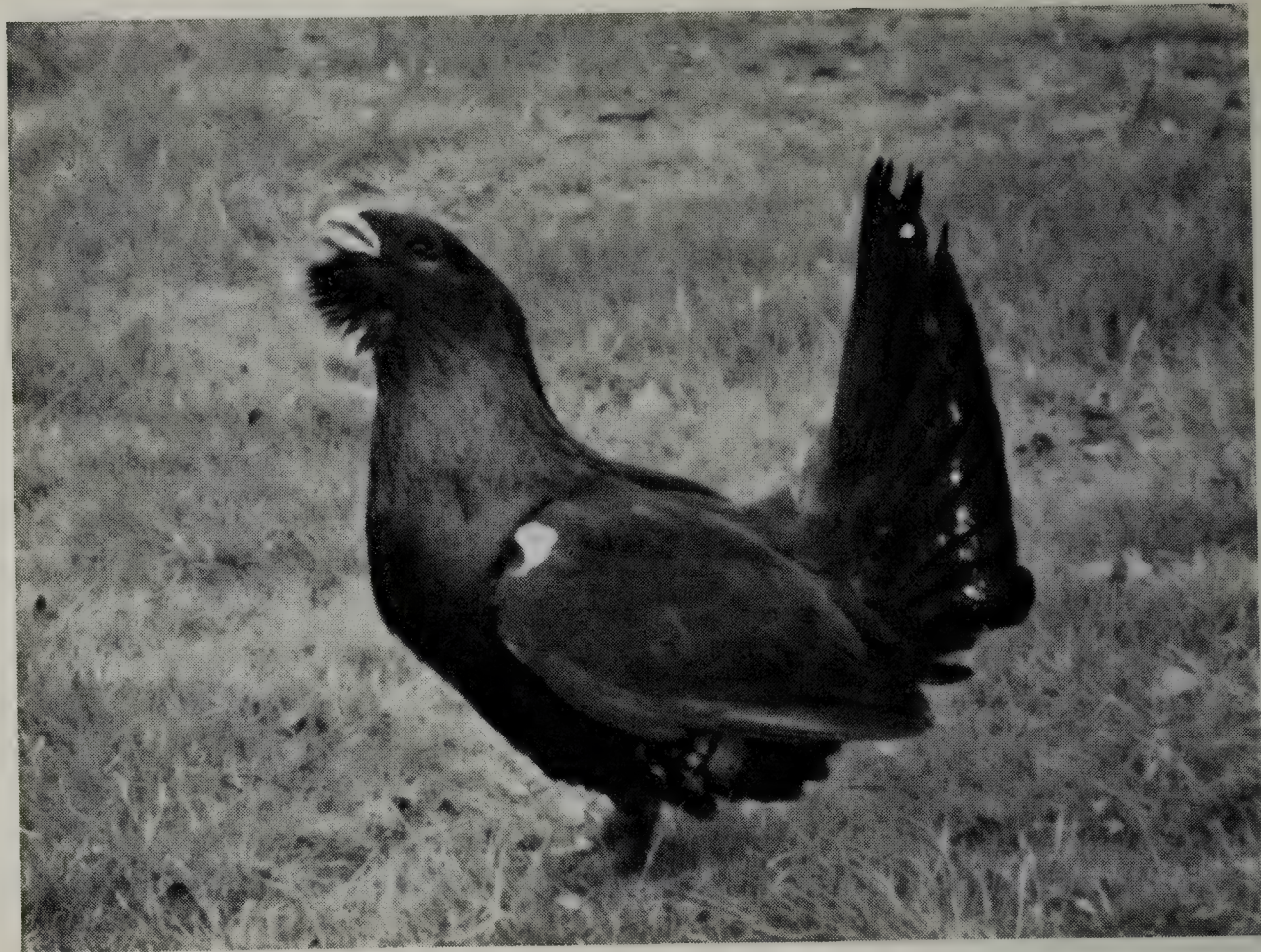
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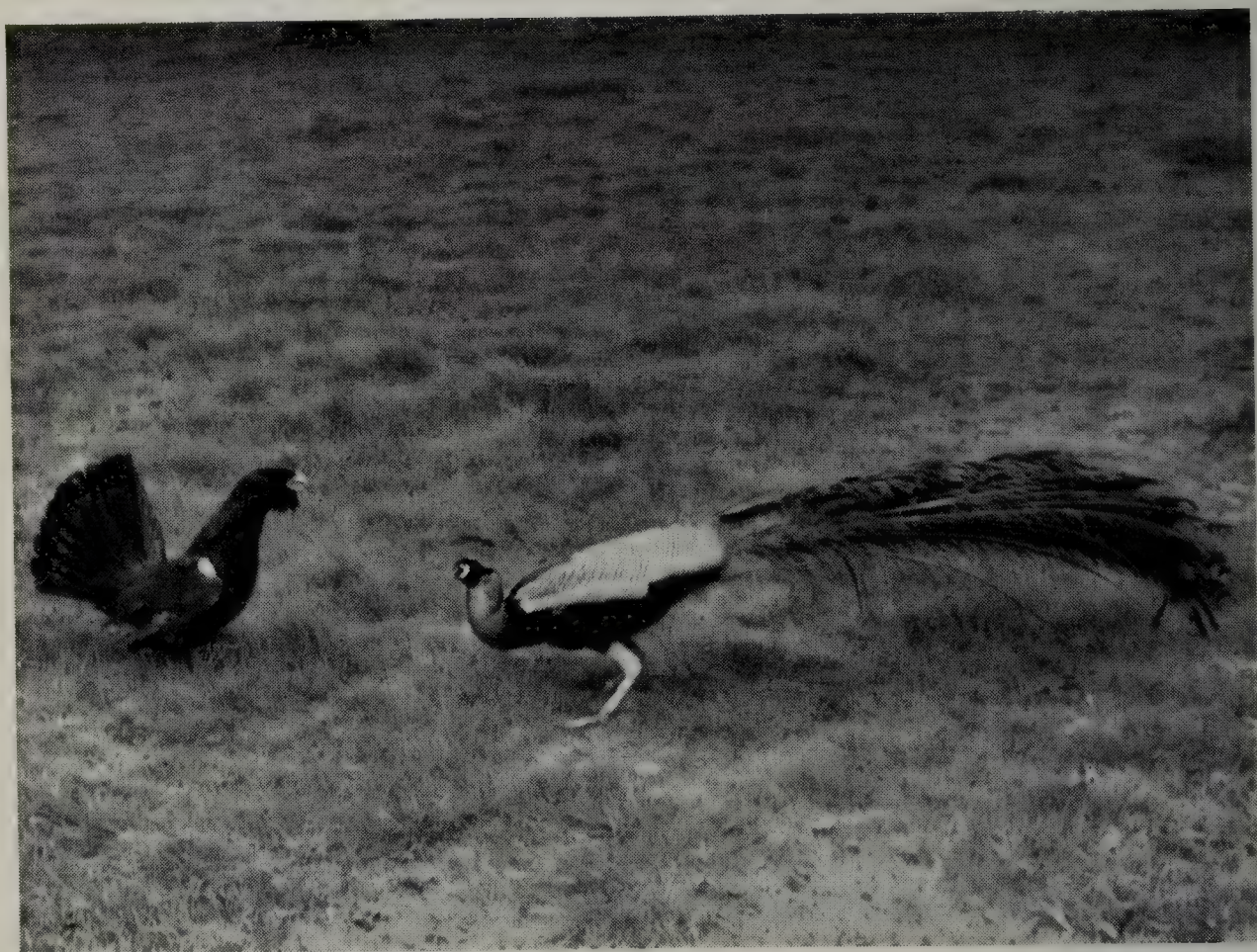








CAPERCAILLIE CLICKING AND FANNING.



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*[S. H. Benson*

CAPERCAILLIE PREPARES TO ATTACK A PEACOCK.



# AVICULTURAL MAGAZINE

THE JOURNAL OF THE AVICULTURAL SOCIETY  
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MARCH-APRIL, 1953

## THE CAPERCAILLIE IN CAPTIVITY (*Tetrao urogallus*)

By S. H. BENSON, Director-Secretary, Zoological Society of Glasgow  
and West of Scotland (Glasgow, Scotland)

When a poultry farmer in the County of Angus, Scotland, phoned me to say that he had trapped a Capercaillie cock bird (*Tetrao urogallus*), and that he wished to present it to our Gardens, I accepted his kind offer with some misgivings. It was in the last week of September, 1950, and the prospects of being able to provide an adequate supply of coniferous feeding throughout the winter were not good.

Although there are many areas of conifer woodland in Scotland, they are not convenient to the City of Glasgow, where our Gardens are situated. I was able, however, to have branches of pine and fir sent in for the first five weeks, and although the bird picked at them, one could not say that it tackled them with avidity, or showed as much preference as it did for the Indian corn (maize) and whole oats supplied by us, or the herbage and insects it got in the 1½ acre wood with thirty deciduous trees.

However, let us first of all consider the psychological attitude of this bird—very difficult to keep in captivity—in a strange and confined environment. In the wood were peafowl, guineafowl, wallaby, Egyptian Geese, Blue Snow Geese and Grey Lag. The Capercaillie moved about in an aloof attitude, at times aggressive. Its one ambition seemed to be to escape; one could not say that it was resigned to confinement.

Its attitude to visitors is one of expediency, and in competition with the other birds it gets a major share of tit-bits; I have noticed a very marked preference for potato crisps! Biscuit and bread are also eaten with relish.

In the winter, when it was thought that the Capercaillie could not live without pine needles, the bird managed finely with the food provided by us, even though it was deprived of herbage through frost and snow.



Following a letter I wrote to *The Field* on the subject of our unique Capercaillie, some rather interesting information followed in the columns of that publication. One writer said that it is evident that young Capercaillie, reared in Scotland, in the wild state, can get no pine needles until they are able to fly up to the tree tops. He knew of young Capercaillie broods going into fields of growing oats long before oats were ripe, and remaining there, feeding on oats and weed seeds, until the corn was cut. But this writer asserted that pine shoots form their winter reserve of food. Nobody doubts this under natural conditions, but our experience proves that the bird can live without coniferous food in the winter.

Dr. Ian D. Pennie, who has investigated the history and distribution of the Capercaillie in Scotland, mentions its reduction in its colonisation areas and its extinction in others, due to widespread felling of conifers caused by two world wars. There is evidence of changes in the Capercaillie habits. Younger plantations are now frequented and birds regularly visit stubbles to feed.

It now seems that we are witnessing a unique change in the habits of the Capercaillie ; a change which may have advanced somewhat farther than we realize. We may well assume that our success in keeping one so long is in some measure due to its being a product of the "new race".

Let us now consider the exhibition of a Capercaillie in a Zoological Garden where the great majority of visitors expect to see striking and exciting specimens. To many, the lonely, ungainly and somewhat unusual bird is interesting. Some think it is a bird of prey. However, the fact that it begs so successfully in face of competition assures the Capercaillie of an admiring audience.

In May, 1952, we were able to observe the display of the Capercaillie. It is a most impressive performance, and I think it is something that few can claim to have seen in the wild state. The neck is stretched and the tail is fanned vertically in a way that suggests the Turkey's nuptial performance ; wings are drooped and the bird struts about in a most hostile manner. Its aggressive attitude is no idle threat, for I have seen it attack our Peacocks and even advance on the keeper when he went into the wood.

The exhibition is not confined to action, and there is an unpleasant vocal accompaniment more suited to a mammal. The prelude to attack is a very clear click, and this call is repeated at frequent intervals. We have been trying to get a hen to keep our bird company but so far have been unsuccessful.

So far as I am aware our keeping of a Capercaillie so long (in a zoological garden) is a record, but it is not by any means a record for keeping them in captivity anywhere. I am most reliably informed that they have not only been kept for a number of years in Sweden,



but several young ones have been bred and reared. At the last International Conference of Zoological Societies, held last September in Rome, I was shown photographs of these birds in Sweden.

\* \* \*

## TWO OLD BIRDS

By THE DUKE OF BEDFORD (Woburn, Beds, England)

It is not often that a Parrot-like bird dies in one's collection of genuine old age. If the management is good it is, indeed, the owner who may first succumb to that universal malady!

This summer I have, however, lost two cock Roseate Cockatoos from this cause, but there was rather a remarkable difference in the manner of their going. One, tame and a talker, I acquired a few years ago from the Zoo, where he had doubtless been a number of years, probably after a similar, or longer, period in other hands. He was at first wing-stiff from long caging, but soon recovered the power of flight and he bred a few weeks later, and continued to breed until this season, when he had no mate.

He remained in good spirits and perfect plumage until a few weeks ago, when he began to spend an abnormal amount of time in the shelter and did not seem as active as usual. His appetite remained good, and he brightened up a bit in the high temperature of the hospital, readily greeting his friends with conversation, but he never got really right, and died before he seemed well enough to turn out again.

The other cock—a non-albino white—I obtained, with an albino hen, about 25 years ago. For some seasons they bred, producing always grey young, but they stopped doing so about sixteen years ago. The cock began very slowly to show signs of age. When I brought my birds to Woburn I decided to fly him at liberty in the hope of rejuvenating him. Complete liberty sometimes has a marvellously rejuvenating effect on birds that have aged prematurely owing to close confinement in a cage, but it did not make much difference to the old Roseate, doubtless because he had long been living in an aviary which allowed a decent amount of exercise. He behaved sensibly, and stayed round the aviaries, but never flew about very much. He also became slowly more feeble and after my aviary attendant had found him one day on the ground, and unable to make his way home, I decided that he would have to end his days in an aviary. The way he hung on to life, not only for months, but even for years, was, however, extraordinary. His plumage became very abnormal, his once-white wings growing more and more pink. He also never had a proper moult, but always had some feathers in quill.



Most of his time he spent sleeping, but the weather did not seem to trouble him, and he would often sit, by choice, in cold, drenching rain, when a cosy shelter was available. His companion at this time was a hen Malabar Parrakeet for whom I have never been able to secure a mate. I thought they would agree together as she would be too small to hurt him, and he would be too decrepit to hurt her. They not only agreed, but formed an attachment for one another—the strangest, most amusing, and most pathetic I have ever known among birds. "*Amor omnia vincit*" was certainly true in their case. There were differences in size, the Cockatoo being about four times as big as the Parrakeet. Their language was wholly different. Their courtship technique was wholly different. A courting Roseate preens his feathers as an invitation to his lady-love to return the compliment, and also to allow him to preen hers; but he does not feed her. A courting Malabar does not preen his lady's feathers, but he does feed her. That the Malabar should have made advances to the Roseate in spite of these difficulties was not so very strange, as lonely spinsters, with or without feathers, *do* sometimes try and make the best of *very* unpromising material! What was extraordinary was that the poor old Cockatoo, with one foot in the grave, and not within a hundred miles of any capacity to be in breeding condition, not only understood the Malabar's affectionate intentions, but appreciated and was flattered by them, trying bravely "to be young for her sake"! When she made advances to him he would perk up and make nibbling movements with his beak, as Roseates do when feeling friendly. He would also start preening and she, partly understanding what was required of her even though it was not at all what the instinct of her species taught her, would pull his feathers in a clumsy but gentle fashion, an attention which pleased him very much.

The sad time at last came, however, when it seemed kinder to have the old man put to sleep as, if he fell off the perch, as he sometimes did, he was only able to regain it with great difficulty.

\* \* \*

## NOTES ON THE GREEN GLOSSY STARLING

(*Lamprocolius chalybeus*)

By BETTY ADAMSON (Slough, Bucks, England)

Glossy Starlings have appealed to me ever since I first saw them at the Zoo as a child, but I did not keep any myself until May, 1951, when I was given a Purple Starling, *Lamprocolius purpureus*, and subsequently purchased an orange-eyed Green Glossy Starling, of whose specific name I was not sure, as a companion for it. There was no sign of pairing between them during the summer, as I half hoped there might be, and later behaviour showed them both to be males.



In November, I acquired another pair of green Starlings, slightly larger and with yellow eyes. Derek Goodwin has examined and compared notes on the plumage of the three green Starlings with skins at the Natural History Museum and has come to the conclusion that they are all the same species, *Lamprocolius chalybeus*, and that the orange eye colour is an individual or local difference, although the books give "yellow" as the eye colour for all races of *L. chalybeus*.

The first owner of the yellow-eyed birds did not know if they were a true pair, and certainly there were no external differences except that one had a permanently ruffled patch of feathers on the breast and was, perhaps, a fraction smaller. They were in very good condition, so I introduced them straight away into an aviary 15 feet by 22 feet, with a shelter 8 feet square, whose other inhabitants were the Starlings mentioned previously, a pair of Blackbirds, several British finches, a pair of Barbary Doves, and a pair of Budgerigars.

They all agreed quite well together during the winter, although the green pair speedily established superiority over the other insectivorous birds, they did not molest them unduly. By March, however, they were becoming decidedly aggressive, and harried the Purple Starling in a disturbing manner, but did not take so much notice of the orange-eyed Starling or the Blackbirds. After one particularly bad scuffle I decided to put them in an adjoining aviary occupied solely by a hen Jackdaw. This aviary was only 6 feet wide by 14 feet long, plus a shelter 5 feet by 8 feet.

Inside the shelter I nailed up a budgerigar nest-box, with the door at the front left open, and both birds showed interest in it but made no attempt to carry nesting material. I had seen the cock offering mealworms to the hen, who accepted and ate them, although occasionally she would return the mealworm to the cock and it would pass between them several times before she ate it. They had also tugged at string securing the perches, as if with nest-building intentions.

On 1st May I nailed up a parrakeet style nest-box, 8 inches square and 12 inches deep. By the next evening a heap of twigs and dried grass had been added. On 3rd May I provided two old sparrow nests, dried leaves and more twigs and saw the female carrying feathers and string to the nest, but she made no attempt to enter while I was present. I did not see the cock carrying any material.

By this time the Jackdaw was very wary of the Starlings and they would not allow her into the shelter to feed. On 5th May I came home in the evening just in time to rescue her from what, I think, would have been certain death, as she was lying on her back on the ground shrieking with fear, with both Starlings pecking at her fiercely, and so engrossed were they in their murderous task that I had to go right inside the aviary to chase them off.

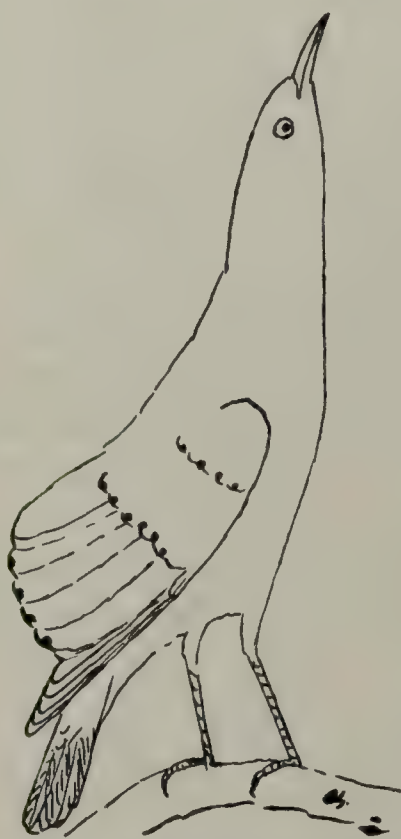
Left to themselves the Starlings spent a lot of time displaying to



each other and the cock would go into aggressive display against the Starlings in the other aviary whenever they approached the dividing netting. There are two common postures which seem to merit full description since they do not appear to have been previously described.

(1) *The threat-display*.—When threatening a rival the male bird holds himself erect, with head stretched upwards and the wings held so that the secondary feathers, with their dark velvety spots, are somewhat spread and fully exhibited in a lateral plane. In this posture the wings (without being opened) are constantly moved with a quick, upward-flicking movement and the irides rapidly contract and dilate.

(2) *The greeting-display*.—When one of the paired Starlings is approached by its mate it often greets it by lowering its head and uttering a note rather similar to, and undoubtedly derived from, the begging-note of the juvenile. This would appear to be in the nature of a friendly greeting and, like so many displays signifying friendliness or submissiveness, it is very obviously the "opposite" of the hostile threat-display.



*Lamprocolius chalybeus* ♂ in "threat-display" posture.



*Lamprocolius chalybeus* in "greeting-display" posture.

On 12th May, having seen no evidence of nest building for three days, I provided fresh moss and dried grass, but this was not used, although a few blades of fresh green grass were added. The next day I threw down some small bits of cotton wool which both cock and hen collected and took into the nest. Early in the morning of the following day (14th May) I put in a handful of white and brown duck



and pigeon feathers which were pounced upon by both birds with much chattering and obvious excitement. By evening the nest was well lined with feathers, and the hen roosted in the nest box for the first time.

On 15th May the hen laid a soft-shelled egg at midday, so I immediately supplied plenty of crushed cuttle-bone and egg-shell. She roosted in the nest-box again that night, but on the following three nights slept on a perch beside the cock. The next three nights she spent in the nest-box and on 22nd May I found an egg, a delicate shade of turquoise-blue mottled with irregular brown splotches. Three more eggs were laid on successive days, all before 1.30 p.m., and one definitely before 10 a.m., but the hen did not commence to sit tightly until the fourth egg was laid.

The cock took no part in incubating the eggs. The hen would come off the nest whenever I appeared—regularly at 8.30 a.m., 1 p.m., and several times after 6 p.m.—in order to claim her share of mealworms. Indeed, if no mealworms were forthcoming she seemed not at all anxious to return. By now both birds were entirely insectivorous, ignoring their usual food which I continued to offer fresh daily, and eating very little fruit. If the hen spent too long off the nest—and towards the end of the incubation period I had time to notice that she frequently spent spells of five to ten minutes away—the cock became very worried and would stretch out his head and neck and run towards her, chattering at the same time, as if trying to persuade her to return to the nest.

On 5th June, exactly fourteen days after the first egg had been laid, one egg hatched, and the chick could be heard squeaking faintly, by 8 a.m. The second hatched between 1 p.m. and 6.30 p.m. the same day; the third before 7 a.m. on 6th June, and the fourth between that time and 7 a.m. 7th June. I looked at the nest once every day in the early morning, when the hen's attention was occupied by mealworms; the young gaped strongly as soon as the lid of the nest box was raised, but I resisted the temptation to handle them. Six days after hatching all four appeared very healthy and there was nothing to choose between them in size; quill ridges were visible under the wing flesh. The female was still feeding them on maggots, and had now commenced to feed large mealworms, ignoring the smaller mealworms and *Tribolium destructor* larvae with which she had been supplied at first. By this time I had put down for this one pair of birds and their four young, about 6,000 *Tribolium destructor* larvae, 2 lb. of mealworms (about 7,000), and 3,500 blow-fly larvae. This seems a staggering amount, but I have under- rather than over-estimated the numbers. Some of the insects were wasted, as I found the hen much keener on picking up insects off the ground than sorting them out of a bowl and so, although the bowls of mealworms



and maggots were always present, five or six times a day I threw down a handful of mixed larvae, quite a few of which no doubt escaped.

The hen was a very enthusiastic feeder, often gathering a dozen maggots or mealworms in her bill at once, but the cock did not feel the call of parental duty very strongly, and would visit the young only occasionally, and then only with one mealworm. He would, however, visit the hen when she was sitting on the eggs or brooding the young, and give her much vocal encouragement.

The seventeenth night after the young had hatched was the last night the hen roosted in the nest box; from then onward she slept on a perch beside the cock. The young looked ready to leave the nest, with their flight feathers well grown and tail feathers about an inch long. I now began to feed a lot of mealworm pupae as well as large larvae and both birds showed a strong preference for feeding their offspring on the pupae, and maggots were taken very seldom. They began to use a harsh, rasping call that I had never heard before, particularly in the early morning and at dusk. By 27th June, twenty-two days after hatching, I was becoming worried as the young were showing no interest in the outside world and their parents were cutting down on food supplies, presumably in an attempt to entice the young birds out. Also the weather had become intolerably hot and the temperature inside the box was well over 100° F. For the first time I handled the young and found three quite big and strong but one very thin and weak. At midday I hand-fed them on bread and milk. At 6 p.m. one young bird was out of the nest and was able to fly a little. He roosted that night on a low perch. The next day was even hotter and I found the weakest Starling dead. I removed the other two from the box and placed them on the shelter floor where they ran around quite actively but were unable to fly; by night, however, they had managed to flutter on to a low perch.

The hen appeared to do all the feeding but often received no response from the young birds. She would lightly tap the beak, and if the bird did not gape immediately, tap its legs gently. If there was still no response, she would go to another bird and repeat the performance, but if, as seemed to happen very often, none of the young would accept the insects in her bill, she would follow them round in a very agitated manner.

By the evening of the next day one bird was very weak, and kept falling on to its side, so I brought it into the house and gave it a dose of brandy and water—a "cure all" for bird complaints, in my opinion. The weather was still extremely hot and the next day, three days after leaving the nest, the lustiest youngster—which had left the nest of its own accord and had begun to fly quite strongly—was found in the evening huddled in a corner on the ground, although at midday it had appeared perfectly well. That too was brought into the house, given



brandy, and caged with the other which now looked stronger, though we had to resort to forcible hand-feeding. The remaining bird looked all right, and roosted beside its father on a high perch.

But alas, next morning the bird we had brought into the house the previous evening was dead and the one left in the aviary was lying on the floor. It failed to respond to any treatment and died within half an hour. The first one to fall sick seemed much brighter but several times that day had bouts of lying on its side and "breathing its last". Each time, however, we managed to revive it with brandy, and it is now a strong bird, having undergone its first moult during October.

I sent one of the corpses for a *post mortem* examination, but owing to the heat the body was too decomposed for the cause of death to be ascertained. The pathologist did, however, suggest that the heat may have had something to do with it, and yet it seems extraordinary that a bird which comes from a tropical climate should succumb to an English heat-wave.

The parent birds continued to visit the nest-box and to add bits of nesting material; feathers, dried grass, etc., and also fresh green grass which I saw the cock pull up with his beak. Several times the cock attempted to mate with the hen when they were picking up mealworms that I had thrown on the ground, and this was the only pairing I witnessed. There was a minor domestic drama before the arrival of the next egg. The orange-eyed Starling in the adjoining aviary had for some time been "making eyes" at the hen whenever she left her family, and when once they were gone he redoubled his efforts to attract her away from her husband. He would run backwards and forwards on the ground beside the wire separating them, then fly to his nest-box, at the same time chattering and calling to her. She seemed quite ready to follow if only the netting had not been in the way, and would run along the ground on her side while her husband pursued her and did his best to get between her and the other cock. But the purple-headed Starling at no time showed interest in "the lady next door".

On 12th July a soft-shelled egg was laid at noon and the hen roosted in the nest-box at night. On 15th July I did not look into the nest box until 6 o'clock in the evening and I then found one egg which was misshapen, being very elongate and pointed. This egg was incubated for sixteen days, but failed to hatch.

On 10th August the hen laid again, just one egg, and this hatched in thirteen days. The young bird thrived and left the nest twenty-three days after hatching. It was out of the nest by 8 a.m. and scuttling round the floor when I appeared, but it did not fly for three days, sleeping on the floor in a corner of the shelter. On the fourth night it roosted on a low perch and from then on made great progress.



The weather was cold with several sharp frosts at night, but the bird seemed unperturbed. The survivor of the previous nest, however, whom I had transferred to a cage in the other aviary shelter, was so miserable, shivering with puffed-out plumage, that I decided to keep him in a cage in the house for the winter.

Ten days after her offspring had left the nest it became obvious that the hen was going to lay again. In feeding the cock had again played only a small part and whereas the hen would gather a bill full of mealworms and deliberately seek out the young bird and feed it, the cock only fed the young bird if it was near him and actually begging for food. Even then he would pick up only one mealworm at a time. As the hen lost interest in him, so the young Starling became weaker; he sat near the mealworm bowl and asked for food whenever one of his parents flew down, but they fed him in a perfunctory and unwilling fashion, and although he had begun to examine food of his own accord and would, I think, have commenced to pick up satisfactorily in another few days, his increasing weakness made it difficult for him to balance when trying to pick up a mealworm. On 27th September an egg was in the nest by 12.30 p.m., and the young bird was so much weaker that I forcibly fed it twice on bread and milk and mealworms. The following day a second egg was laid by 11 a.m., and I removed the young Starling and caged him with the other young one who had now commenced to moult and had become very quiet, but was eating well.

Two days before this next lot of eggs were due to hatch the aviary roof was repaired and the hen was off the nest for over three hours, being replaced by a hot-water bottle. I hadn't much hope of the eggs hatching, as the weather was extremely cold and the hen seemed to spend even longer intervals away from the nest than she had done previously, so I was greatly surprised to find a chick in the nest at 8.30 a.m. on 11th October. The second chick was just out of the shell when I looked in the nest at 10.30 a.m. the following day. This egg shell was not removed until noon, when I saw the cock fly out carrying half the shell which he proffered to the hen as though offering a mealworm. She did not take it from him, however, and he then flew down to the ground and ate some of it. This was the only time I saw the shell removed and eaten, but as I never found any traces of the other egg shells, I presume they must all have been treated in the same way.

The day was overcast and cold, and my joy at the successful hatching was somewhat tempered by the fact that the hen did not appear to share my pleasure, and spent very little time with her offspring. The following evening one had disappeared and the other felt cold, but was still alive the next morning when I brought it into the house to try to hand-rear it. Unfortunately I was not successful.



At the time of writing (December) the two young birds that did survive are spending the winter in a large cage in our kitchen, and judging by the amount of their "singing" are both cocks. The last-hatched has only just commenced to warble properly, but for some weeks has been emitting the most awful, harsh, nerve-racking squawks in an effort to find his voice. Like budgerigars they appear to be stimulated by certain noises such as a kettle boiling and food frying. It is at times quite difficult to make oneself heard.

A brief note on the general feeding of the Starlings may be of interest. Their staple diet consists of Sluis' Universal food, Rudd's Anteggo, bread and milk, and fruit, pear being the favourite. A handful of mealworms or maggots is thrown down twice a day. The birds also relish scrambled egg, cake crumbs and other odds and ends from the household table. They were outside all last winter with only slight heat supplied by an electric tubular heater on the very coldest nights. This year they have had no heat at all and appear quite fit, although we have had some extremely cold weather.

The insects offered to the pair when rearing young were all species that infest various foodstuffs and of which I am able to obtain fairly large quantities through my work. Larvae of the following species were used :

*Carpophilus dimidiatus*—Corn-sap beetle.

*Tribolium destructor*—Dark flour beetle.

*Alphitobius laevigatus*—Lesser mealworm.

*Tenebrio molitor*—Mealworm.

*Ephestia kuehniella*—Mill moth.

Three species of blow-fly.

The first mentioned, *C. dimidiatus*, is easily cultured on a mixture of 18 parts rolled oats to 1 part dried yeast powder, and if kept at a temperature of 25° C. (77° F.) will produce large numbers of soft-bodied white larvae, about 5 mm. long, in two to three weeks. I imagine they would be extremely suitable for small, delicate, insectivorous birds.

Cockroaches were offered on several occasions, but never accepted.

My thanks are due to Derek Goodwin, not only for kindly supplying the line drawings, but also for much helpful advice on the preparation of this article and management of the birds generally.

\* \* \*



## THE BIRDS OF LAKE MÝVATN, ICELAND

By JOHN YEALLAND (London, England)

Lake Mývatn is situated in north-eastern Iceland, some 55 miles by road from the town of Akureyri and at about 1,000 feet above sea-level. The lake is indeed a beautiful place in a country of much scenic grandeur and there can be few comparable places in the world where waterfowl of thirteen species breed in such numbers or in such a concentration.

The main reasons for this would seem to be the abundance of food, the comparative scarcity of natural enemies, and the suitability of the nesting terrain on the shores, on the islands and about the surrounding streams. The ducks are never shot but are carefully preserved for the egg harvest.

All the land around the lake and every island, however small, belongs to one farm or another, and the ducks' nests are robbed of all but four eggs, though great care is taken that no bird deserts because of the belief that it will re-nest on someone else's land. The eggs are a considerable source of income to the farmers, who must make a return of the numbers taken to the Inland Revenue authorities for the purpose of income tax.

Thus it would be impossible to ascertain exactly how many eggs are taken annually because no doubt the official returns err on the side of modesty, but it must amount to some thousands.

It might be thought that this egg-collecting must be disastrous for the birds, but evidently that is not so, for the mortality among the ducklings is very high, mainly, it would appear, for the reason that many of them lose sight of their mothers, so that unless they are able to join on to another family—and most ducklings are, of course, often hostile to newcomers—they soon perish from the cold. If, therefore, the mothers are unable to care for four it is unlikely that they would be appreciably more successful with a normal brood.

Also, of course, the taking of eggs has been going on for many years, yet it would seem that the area could scarcely support a much greater population than the present one.

The chief natural enemies are the Raven (*Corvus c. corax*) and the Greater Black-backed Gull (*Larus marinus*), neither of them common. I once saw a pair of these gulls attacking a duck far out on the lake. The duck was trying to escape by diving, but its course under the very clear water was easily followed by the gulls which pounced upon it whenever it came to the surface. At length they caught it and then set about trying to drown it—and dreadful it was to see the unhappy bird striving to get its head up for air.



The Ravens sometimes take sitting birds, but the remains of ducks and their eggs are not a common sight.

I think it is correct to say that the birds of prey (the Iceland Falcon, Snowy Owl, etc.) which seem to be rare round about the lake, for I did not see one, and the Arctic Fox, which is shot by the farmers, feed more on the Ptarmigan than on the ducks. The name Mývatn means the lake of gnats or midges—and very appropriate the name is, for these and small flies are present in the summer in many millions. Mercifully they do not bite, but on a sunny day they swarm in such clouds that it is sometimes difficult to see where to step. While I was there in June a 24-hour blizzard killed off many of these insects so that life for the ensuing week became more agreeable.

These insects with their larvae and pupae must form a large part of the diet of the birds ; there is also a species of caddis-fly, the larvae of which are attached to the submerged lava boulders, and some water-snails.

Reykjahlid on the northern side of the lake is perhaps the best place for seeing the nesting birds. A mile or so off shore is the pretty island of Slutness, a favourite nesting place, as is a tip of land on the further side wherever the ground is carpeted by the dwarf birch with moss growing up between its foot high twiggy branches.

The lake in this area is no more than five or six feet deep, and here it seemed that the Long-tailed Duck (*Clangula hyemalis*) was more common than elsewhere, and at another place a few miles off Barrow's Golden-eye (*Bucephala islandica*) was more plentiful ; another was more favoured by the Common Scoter (*Melanitta n. nigra*) and in another there seemed to be more Tufted (*Aythya fuligula*) than anywhere else.

The most common duck of all was the Scaup (*Aythya m. marila*) and it may be that these preferences for certain localities is determined by the nesting terrain rather than by any food factor.

Red-breasted Merganser (*Mergus serrator*), Wigeon (*Anas penelope*), Pintail (*A. a. acuta*), Gadwall (*A. s. strepera*)—said to have become more common within the past 40 years—Teal (*A. c. crecca*), and Mallard (*A. p. platyrhyncha*) also nest here.

A certain amount of indiscriminate laying of eggs seems to take place, single ones being laid far from any nest, and once I found a nest with nineteen Scaup eggs in it and a Long-tailed Duck sitting on four of its own and four Scoter eggs. Barrow's Golden-eye normally nests in holes or crevices in the lava rocks but on Slutness one was sitting under the bushes, the nest being rendered very conspicuous by the heap of pale grey down. I was shown a cavern with perpendicular sides in which a Barrow's once nested on a ledge, the young being unable to get out until rescued by a kindly farmer.

Contrary to the impression conveyed by a drawing of Mývatn in Millais' *British Diving Ducks*, the Harlequin Duck (*Histrionicus h.*



*histrionicus*) is rarely if ever present on the lake itself, but, like the Goosander (*Mergus m. merganser*), inhabits the fast running streams and rivers, particularly those with islands in them, which flow in or out of the lake. At one place on the southern side Harlequin Ducks may be seen from the road. These strikingly handsome birds are tame, allowing one to approach quite near and then not taking flight but swimming off downstream.

It is strange that they possess such quiet voices, for they must scarcely be able to hear one another amid the rushing waters of their favourite nesting places.

Within a few feet of the shore at Reykjahlid were two nests of the pretty Slavonian Grebe (*Podiceps auritus*) and on Slutness in a crevasse in the lava was a nest of the Iceland Redwing (*Turdus musicus coburni*) with newly hatched young, while in a loose stone wall a White Wagtail (*Motacilla a. alba*) had its nest. Here the Red-necked Phalarope (*Phalaropus lobatus*) was a common bird and one nest with the husband dutifully sitting was found. The Arctic Tern (*Sterna macrura*) is also common and the nest, always placed in conspicuous position, would yet be difficult to find because of the coloration of the eggs if the parent birds did not betray their presence by mobbing the intruder. The Northern Golden Plover (*Pluvialis apricaria altifrons*) is quite common, small flocks often being accompanied by Dunlins—the form intermediate between *Calidris a. alpina* and *C. a. schinzii*. The Faroe Snipe (*Capella gallingo faroeensis*) and the Whimbrel (*Numenius p. phaeopus*) are sometimes to be seen round about the lake ; also a few Black-headed Gulls (*Larus r. ridibundus*).

In rocky places the Snow Buntings (*Plectrophenax n. nivalis*) were nesting and the males performing the pretty display flight ; the Wheatear—intermediate between *Ænanthe æ. ænanthe* and *Æ. æ. leucorrhœa*—seemed quite rare, as was the Meadow Pipit (*Anthus pratensis*).

One Red-throated Diver (*Colymbus stellatus*) was seen and another heard ; a single specimen of the Kentish Plover (*Leucopolijs a. alexandrinus*) was also seen, but perhaps the rarest of the summer visitors to Mývatn was a single drake American Wigeon (*Anas americana*) flying in company with two females which may or may not have been this or the Common Wigeon.

In Reykjavik the Mallard is common on the small lakes within the city and very tame ; the graceful Arctic Tern is also common. On an island in the bay there is a colony of Eiders, not seen, but presumed to be *Somateria m. mollissima*, nesting as elsewhere in artificial nests provided for the purpose of collecting the down. The journey by road from Reykjavik to Akureyri (285 miles) is of great interest. Whooper Swans (*Cygnus c. cygnus*), Grey Lag-Geese (*Anser a. anser*), a few Whimbrel and Golden Plover, and one or two of the Iceland Redshank



(*Tringa totanus robusta*) were seen. One unforgettable picture was presented by some Eiders flying over a small lake against a background of blue-grey mountain.

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## ON RE-MATING PSITTACINE BIRDS

By EDWARD BOOSEY (Keston, Kent, England)

For some years we had a cock Alexandrine Parrakeet mated to a hen lutino Ringneck, and they produced several broods of rather handsome hybrids which were about intermediate in size between their two parents, and had light biscuit-brown wing-patches instead of the maroon-red ones of an Alexandrine.

Last year I decided to mate their mother to a cock lutino Ringneck, and their father to a hen Alexandrine bred by Captain Veitch, and the latter mating produced a brood of three excellent young Alexandrines. The cock Alexandrine, however, recently died, and I decided to mate the hen to one of the male hybrids; a mating which (if the inheritance is a sex-linked one) ought to produce a percentage of lutino hen hybrids which would be three-quarter Alexandrines.

After allowing the Alexandrine hen a decent interval in which to mourn her late husband, I introduced the male hybrid into her aviary, which is of our cockatoo type, without an enclosed shelter, but with the back and third of the top and sides boarded over. The meeting was, on the hen's part, frigid in the extreme, and she regarded the unfortunate cock with a glassy stare worthy of a disapproving Duchess in a novel by Ouida. Although she did not actually pursue him about the aviary, as a Broadtail would have, she lunged at him if he ventured anywhere near her, and would not allow him under the sheltered part of the aviary at all.

I then moved them both into an aviary of quite a different type with an enclosed shelter, and at once the hen was perfectly amicable with him, even when shut in the shelter at night. After three weeks or so, thinking they had got quite used to each other, and that the hen might breed better in her old aviary, I put them back in it, and immediately the hen became as hostile to him as before, glaring at him as though he were a complete and highly undesirable stranger. Once more I transferred them to the other aviary and once more peace reigned, this time with her actually making advances to him!

One may say that the hen's behaviour was strange—and so it was—but I suppose it is only on a par with the widow who marries again, and doesn't mind living with her new husband in a new house, but couldn't bear the thought of doing the same thing in the old one—which would "have associations" for her!



This matter of association is very strong in birds ; it is clear that the hen Alexandrine associated her old aviary so strongly with her former husband, and the covered part of it with where her last year's brood was reared that, while the new cock was permitted to sit unmolested in the open part of the aviary, he must on no account be allowed under the covered part where the nest-box used to hang. Taken away from these familiar surroundings her hostile attitude towards him ceased immediately.

It is for this reason that it is so important in the case of really aggressive parrakeets such as Broadtails never to put a newly acquired hen into a cock's aviary, particularly of course if he has recently lost his wife. Even if he has not been previously mated he will be apt to resent the sudden appearance of a hen in his aviary, and will be quite capable of scalping her unless a careful watch is kept to see that they agree.

The best plan is to put the hen in an aviary by herself for several weeks—preferably in sight of the cock—and then put *him* in *her* aviary, where he will feel like a new boy at school and will be too busy exploring his unfamiliar surroundings to attack the hen.

Of the Broadtails I have kept I have found Brown's Parrakeets by far the most difficult to re-mate, and one of the most deadly aggressors if they happen to disapprove of the partner you offer them, so anyone possessing these rare and beautiful parrakeets would be wise to take every precaution when re-mating them, or even when mating them for the first time. Before the war we had at Keston a wonderful breeding pair of Brown's who reared a large number of young ones during the years we had them, and when eventually the hen died, the cock was very pathetic and quite inconsolable and indeed did not long survive his wife. Any hope of re-mating him was quite out of the question as he savagely attacked any hen that was put with him. Such constancy among parrakeets must be rare.

At the other end of the scale, Stanleys, as well as being the smallest and one of the most attractive of the Broadtails are by far the easiest to re-mate.

Grass parrakeets usually are quite easy to mate or to re-mate, though Turquoisines are, as they are at all times, the most inclined to squabble.

Redrump Parrakeets may be "faithful unto death" but that, I fear, is as far as their faithfulness goes, as I have found that members of either sex are only too willing to clasp to their bosoms, with almost indecent haste, any reasonably presentable partner that is offered to them !

I would say that most Cockatoos are quite easy to re-mate, and in my experience Lesser Sulphur-crested, and Citron-crested, and perhaps to a lesser extent Leadbeater's, usually regard a new partner without any great show of interest. Roseates, on the other hand, are more demonstrative and therefore more amusing, and, if



the meeting is a success—as it usually is—they go through the strangest antics ; raising and lowering their crests ; preening each other's crests ; and the cock, apparently desiring to admire his fiancée's profile from either side, never climbs or flies *over* her, but invariably tries to climb *under* her, often falling off in the process ; this being the signal for much raucous screaming and agitated raising of crests !

Blue-fronted Amazon Parrots, and other members of the Amazon family, are capricious : sometimes a newly introduced cock and hen will take to each other almost at once, slowly approaching each other along the perch with wings slightly lowered and thrust forward (presumably to display the differing colours at the bend of the wing as a sex-recognition sign), head feathers raised, and eyes blazing, the latter apparently being used to denote either anger or pleasure, and if, having met, they sit side by side and putting their heads in the air, utter their extraordinarily varied assortment of chortling cries—you can assume that they approve of each other. Sometimes, however, a pair will eye each other with suspicion—even for several weeks—although they may eventually become perfectly good friends. There is usually no risk to life and limb so long as they have plenty of room to keep out of each other's way, but on no account should they be confined together in at all a small space.

African Grey Parrots are a different proposition altogether, being temperamentally quite unlike any other member of the parrot family. When one has been living by itself in an aviary and another is put with it, there is seldom any sort of demonstration on either side ; dead silence reigns while they eye each other warily, though contriving to maintain an air of boredom. Suddenly one or both will give vent to one of their rudest noises or else a shrill whistle, and then again there will be silence, while they both look apprehensively round as much as to say " Who made that noise " ?

After a long interval of inactivity, the original occupant of the aviary *may* sometimes be seen sidling in a slow and sinister manner towards the newcomer, and at this point, if the latter stays put and has not the sense to remove itself out of harm's way to another perch, it should be rescued before it gets hurt. If, however, it gets out of the light, and the birds are not in a confined space, it is usually safe to leave them together. Even if they prove to be a true pair, a state of armed neutrality may be expected to persist for several days or even longer, and it is only when you see them, with locked beaks, pumping their heads rapidly up and down, that you can be sure you have got a true pair and if, after this friendly demonstration, the cock gives the hen a sly nip on the leg, causing her to squawk with pain, there is nothing to worry about, for it is all part of a Grey Parrot's strange courtship !

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## BREEDING RESULTS, SEPTEMBER, 1952— JANUARY, 1953, AT DIEP RIVER, S. AFRICA

By ALLAN FRANK (Diep River, Cape Town, S. Africa)

My main aviary accommodation consists of a large planted aviary measuring 75 feet long, 50 feet wide, 10 feet high, in which are built two sheds measuring 30 feet by 9 feet by 8 feet high, and 10 feet by 9 feet by 8 feet high respectively. The aviary is well planted with flowering trees and shrubs, with a miniature rivulet winding throughout its length.

The breeding season in this part of the country takes place from September to February; some of the Australian species continue breeding up to June. In this aviary, I keep quite a large selection of both soft bills and hard bills, which include approximately 120 different species. The following species have been bred and successfully reared during the period mentioned above, i.e. September, 1952, to January, 1953: Blue-breasted Waxbills, Little Ruddies, Scathy-headed Weavers, Melba Finches, Grey Java Sparrows, Golden Sparrow, Spice Birds, Tricolour Nuns, Cuban Finches, Long-tailed Grass Finches, Silver-eared Mesia, and Silver-blue Tanagers.

A pair of Pekin Robins nested and hatched two chicks but, unfortunately, owing to some disturbance or other, the chicks died after five days. I am glad to say, however, that another pair of Pekin Robins is at present sitting on two eggs.

I obtained a pair of Silver-eared Mesias (*Mesia argenteauris* Hodgson) three years ago, and during breeding season before last, that is, 1950–51, these birds went to nest no less than three times and on each occasion two eggs were laid and the young successfully hatched, but it was found that after five to six days, the chicks died. Then last breeding season, this pair of Silver-eared Mesias went to nest in September in a "Morning Glory" creeper. The chicks were hatched and the parents neglected them after three days.

In October they went to nest again in a Loquat tree where again the chicks were hatched and died after seven days. In December, 1952, they again went to nest and built a deep cup-shape nest of broad leaves lined with coir in the fork of a peach tree situated 5 feet from the ground; two eggs of a pale blue colour, blotched at the thick end with brown, were laid, and were successfully hatched. (Incubation period uncertain.) After three days, one of the chicks was found dead on the ground under the nest and had evidently been removed by the parents. The remaining chick was well catered for by the parents and was fed on mealworms which were placed in a small box attached to one of the branches of the peach tree, into which a dozen mealworms were placed five times a day. On the tenth day, the chick



left the nest, but was unable to fly very well, and the parents fed this chick on the ground. I am happy to state that the young Mesia is now fully grown and it would appear that, under better conditions, that is, without interference from other birds, it would be quite easy to breed this species in captivity.

My Silver-blue Tanagers went to nest on approximately 18th November, laying three eggs of a very faint blue texture, blotched with brown at the thick end. They built a shallow-cupped nest of twigs lined with coir in a dry bush, which was fixed to one of the aviary supports and about 5 feet from the ground. The incubation period is uncertain, but I would say approximately 17 days. Three chicks were hatched, which left the nest after fifteen days. The chicks were fed by the parents on mealworms and termites. Some difficulty was experienced in feeding these mealworms to the parents, owing to the large collection contained in the aviary; however, this was overcome by placing a small wooden tray 3 feet below the nest in which a small quantity of mealworms were placed five times a day. The young Tanagers were of a drab silver-blue colour when leaving the nest, and they are now flying about in a healthy condition.

It would appear that this species breeds quite freely and the parents are now again sitting, but unfortunately this time their nest is built in a "Morning Glory" creeper, 9 feet from the ground. Consequently it is impossible to make full observations.

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## PARRAKEET EYE DISEASE

By Dr. F. B. LAKE (Kingston-on-Thames, England)

Contagious conjunctivitis has long been the bane of those interested in the Australasian parrakeets. Practically confined to newly imported birds of the more desirable species, the disease has ruined many a precious consignment. Formerly it was almost invariably fatal. The bird arrived with a "sticky eye" or developed one shortly after arrival, and despite all the owner could do, progressed slowly but inexorably to a fatal termination some weeks or months later.

There have, however, been some reports of cures. John Yealland cured some of the larger parrakeets years ago with instillations of mercury perchloride, but did not succeed with Grass Parrakeets. Mr. Vane has had success with sulphonamides. David West senior cured a Many-coloured with aureomycin and yellow oxide of mercury, and Mr. T. Holmes Watkins a Splendid with sulphonilimide. I believe there have also been successes with penicillin.

I recently had the opportunity of investigating and treating six cases of this disease, and whilst these do not provide sufficient data for final



conclusions, I think the results sufficiently suggestive to be of some value. Of these six birds, four are cured, one probably cured, but still under observation, and one still under treatment at the time of writing.

The clinical appearance of affected birds is fairly constant. The disease begins as a slight thickening of the margin of the eyelids, sometimes with some beading of the smooth edge of the lid, so that the lid margin, almost invisible in health, becomes an obvious thickened rim round the open eye. There is slight, usually watery, discharge, sometimes so little as to be hardly noticeable. The bird blinks frequently and rubs its eyes on the perches. After a time the eyelids and tissues of the orbit exhibit a watery swelling which displaces the feathers from the margin of the eye, and leaves a ring of bare puffy skin round the eye. Finally the swelling becomes gross, the eye cannot fully be opened, the lids are often stuck together in the mornings by dried discharge, which tends to become more abundant and purulent, and is frequently rubbed off on to the perches or the plumage of the bird's shoulders. The unfortunate bird may linger on in this state for several weeks before death ensues.

Of the various remedies now available, sulphonamides such as sulphonilimide are effective against a number of bacteria which may infect the eye. Penicillin is effective against a considerably larger number and the new drugs aureomycin and chloromycetin are effective against nearly all the organisms causing conjunctivitis in man, with a few exceptions. Antiseptics such as  $\frac{1}{2}$  per cent zinc sulphate, 1/10000 perchloride of mercury, or 5 per cent silver protienate may be employed with some effect in cases which do not respond to the new remedies.

If the germ responsible can be cultured from the infected eye, the bacteriologist will report on its sensitivity to the antibiotic drugs, and so one knows at once which to select, and what prospect of success one has. Failing such a culture, one can try one after another until one finds a remedy to which the particular infection is sensitive.

The eyes of the birds I treated were swabbed with dry sterile cotton wool, using an ordinary medical throat swab, and the swabs sent to a pathology laboratory for culture. Partly I think, because of the technical difficulty of getting a good smear of a small bird's eye, and partly because I was obliged to send my specimens by post, in only two cases was a pathogenic organism isolated. These rather surprisingly grew a penicillin-resistant strain of staphylococcus aureus. Staph. aureus is a common septic organism of world wide distribution, causing a variety of septic infections in man and animals. Most strains are highly sensitive to penicillin, a few (such as this one) are penicillin-resistant, and these usually respond to aureomycin or chloromycetin. Staphylococci are not usually affected by sulphonamides, and a case cured by sulphonilimide must have been infected with some other organism.



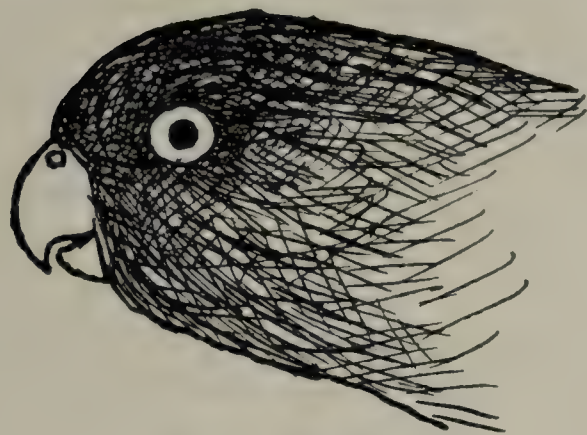


FIG. 1.—HEALTHY.

The lid margin is hardly visible. The plumage closely surrounds the eye.

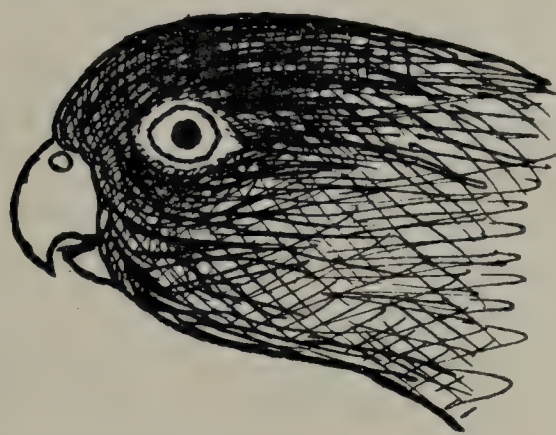


FIG. 2.—MODERATE EYE DISEASE.

The lid margin is thickened and a little swollen bare skin is visible. This stage may last a very long time.



FIG. 3.—SEVERE EYE DISEASE.

There is gross swelling of the orbit—displacing the plumage. The eye cannot be fully opened.



To consider my cases in detail :—

(1) Hen Barraband. Advanced disease in one eye; the other normal. Culture failed to grow. Various antibiotics tried successively—at first as a *spray* applied several times daily. With penicillin the condition became worse. With  $\frac{1}{2}$  per cent zinc sulphate no improvement. Suspension of aureomycin produced temporary improvement, but failed to make further progress after three weeks. Chloromycetin,  $\frac{1}{4}$  per cent spray showed no change, and the disease appeared in the other eye.

The bird was then, after three months of experiments, rather worse than when she arrived. The disease had been somewhat checked in the bad eye, but had started in the originally healthy one. I then, almost in despair, tried a new and improved preparation of chloromycetin which had just come on to the market. This was far too expensive to apply as a spray and I was forced to catch the bird daily and put the preparation directly into the eyes with a dropper. This proved to be the secret. With the much more effective concentration of the drug obtained, and the mechanical washing out of the pus by repeating the dropping every minute for five minutes, once daily, a rapid improvement occurred and the bird was well in a fortnight.

I had at first been obsessed with the idea that I must avoid daily catching, for fear that the bird's general health would not stand so much handling. When I eventually had to do it, I found this fear quite groundless, providing one used a very small cage into which one could put one's hand and take the bird without fuss and with no room for the bird to hurt itself trying to evade capture.

Cases (2) (3) (4) treated together. Another hen Barraband and two Crimson-wings. All had moderately severe disease of both eyes. From the Barraband and one of the Crimson-wings a germ was successfully cultured and reported as "*Staphylococcus aureus*", resistant to sulphonamides and penicillin, sensitive to chloromycetin, and very sensitive to aureomycin. From this report aureomycin was obviously the treatment of choice, and was applied by dropping the eyes once daily with a suspension of aureomycin powder in distilled water, 40 milligrammes in 5 c.c. All responded well. The Crimson-wings were cured in three weeks. The Barraband, however, twice developed a severe enteritis (she had loose droppings on arrival), and her treatment had to be suspended whilst she was given heat, and sulphamezathine in her drinking water for the enteritis. She is probably cured now, but has not been under observation long enough after cessation of treatment to be sure.

Cases (5) (6) Bourkes Parrakeets. Both had been treated before arrival with sulphonilimide, without improvement. Cultures failed to grow.

(5) had slight thickening of the eyelids and hardly any discharge. It was cured after two weeks daily dropping with aureomycin.



(6) had mild disease in one eye, and fairly severe disease in the other. It improved very very slowly, and after three weeks had made so little progress that (in the absence of any bacteriological report to help) it was thought penicillin might be worth a trial, and in three days penicillin drops produced definite improvement. The bird then unfortunately became severely ill and had to spend two weeks in the hospital cage, with suspension of treatment, and both eyes relapsed. It is now under treatment again and improving slowly, but had a great deal of lost ground to make up. The large parrakeets were held in the hand and a drop put in each eye, each minute for five minutes. The Bourkes proved too frail to endure this and I was obliged to be content with one drop in each eye and immediate return to the cage. This, I think, was the reason for the relative failure of aureomycin in case (6).

In all cases cure was only assumed if the bird had been observed for at least two weeks without treatment and showed no sign of recurrence of thickening of the eyelids in that time.

Although most of my cases were infected with penicillin-resistant organisms, I think it improbable that this represents the usual state of affairs. Penicillin is highly effective against most strains of staphylococci and against most germs that sulphonamides will kill, although not quite all. Aureomycin is the antibiotic of widest range and is effective against nearly all bacteria likely to cause conjunctivitis. It is, however, in short supply in the United Kingdom; chloromycetin, available here, is nearly as good. Penicillin, being non-irritant and very freely soluble, would be best for penicillin-sensitive cases—as probably the majority are. Sulphonamides would be effective in a fair number of cases, but not against staphylococci, so that there seems little to be gained by trying them before proceeding to penicillin or the 'mycins'. In conclusion, it seems established, that parrakeet eye disease is a septic conjunctivitis which can be caused by staphylococcus aureus, and probably by a number of other septic organisms as well. Why it should be confined to a few species of Australasian parrakeets, is difficult to explain. It may perhaps be due to inherent lack of resistance in these birds rather than a species-specific infection. It should be curable in most cases by systematic dropping with a suitable antibiotic. I think it would be best to try penicillin first, and if no improvement is noticed in, say, one week, to proceed to aureomycin or chloromycetin—one or the other of these drugs is likely to prove effective.

I am most grateful to those members who have entrusted me with their sick birds for this investigation and hope that the results may be of some help in the future management of this disease. Of course more cases need to be investigated before final conclusions can be drawn.

\* \* \*



BREEDING ACCOUNT OF THE RED-SIDED  
ECLECTUS PARROT*(Lorius roratus pectoralis)*

By H. J. INDGE (Thorpe, Surrey, England)

A batch of twelve Eclectus Parrots arrived on the 13th April, 1952 ; ten Red-sided and two Grand. The latter were taken by one of our lady members, and within a few days I transferred all the Red-sided to various outdoor enclosures. I took them out each morning and brought them back to the bird-room each evening. It may be interesting to know that I took each on my finger for these trips. One day, one of the cocks took wing, and although he made no elevation, he flew quite a hundred feet, with beautiful outstretched wings. I believe he was the only full-winged bird among them, so I transferred him, together with the most promising-looking hen, to an aviary to themselves and left them out altogether. This must have been very early in May, and although we had several frosts that month, the birds were not any the worse for it, even though they had no artificial heat.

By the middle of June the hen had taken to the nest-box, coming out occasionally, and by the end of June she stayed in the whole time, coming out only for a few minutes a day. How many visits were made to the box, to look through the inspection hole, I don't know ; each time the hen came off, I should say, until we nearly tired of looking and believed the hen was just pretending. However, just once more—that was the 29th July—lo ! and behold ! an egg ! The next day another !

Immediately the hen sat tight, coming off only for the bare necessities about twice a day, when she moved no further than a foot from the entrance. Each time we had the chance to inspect, we did, and know for a positive fact that one egg hatched on the 24th August and the second the next day. We had a chance to watch the chicks for a few days, and then one disappeared ; probably died and was flattened out. The inspection hole was such that we could see into the nest through a tiny aperture, but could not, nor would not, interfere further.

They were born devoid of down, just like budgerigars, and at thirteen days we noticed a light grey fluff, darkening to the darkest grey and appearing to have the texture of the coat of a woolly monkey. At five weeks a feather, like an emerald, could be seen on the back, and from then on he feathered quickly ; well, as far as quickly goes with Eclectus Parrots.

On the 20th November, he left the nest, after having spent three or four days in contemplation. I wanted to go to the National Show and as a severe frost seemed likely, I took him and his parents, and



placed them in a flight in the birdroom. A risk, I know, but all went well, and a fortnight later, he was picking up food for himself.

The aviary in which the parents lived was 12 feet by 6 feet by 7 feet high. The cock spent most of his day in the shelter, indulging in a couple of flights around the aviary daily, but always ready to answer the hen's call for food. This was a strange, high-pitched affair, which could be heard 500 yards away, and she started calling right from the time she first went into the box, until I took them into the birdroom—some 5 months.

During the whole of that time, the cock was seen to go into the box only twice, once for about two minutes, and the other time for as many seconds. The hen always came to the entrance hole to be fed. She seemed to have the parental love of a mammal rather than of a bird, but then, there is something so very different about an *Eclectus*.

She never flew, as her flights were clipped, and even now that the new feathers have grown, she has never taken wing. About a fortnight ago I decided to separate them, but the family seemed so dejected, that they were united again.

During the time the youngster was being fed, I gave a quantity of green food, but I never particularized, just picked whatever came to my hand in the garden, in the way of weeds, and also marigold and forget-me-nots, both leaves and flowers. I was reluctant to give fruit, although just occasionally I gave a grape or piece of apple. The seed mixture consisted of sunflower and canary.

The youngster was slightly darker than his father, with a horn-coloured bill. Now, except for the tip of the bill still having a smudge, there is no difference.

\* \* \*

## LONDON ZOO NOTES

By JOHN YEALLAND

On reading in a Nigerian newspaper that one of the orange-bellied sub-species of the Senegal Parrot had been presented by Mr. Prestwich, Sgt. F. W. White of the Military Hospital, Kaduna, wrote offering the gift of three more which also proved to be *P. s. versteri*.

These birds came from quite near the range of the doubtfully distinct *P. s. mesotypus*, called by Sclater in *Systema Avium Æthiopicarum* the Kano Yellow-vented Parrot.

A male Hawaiian Duck (*Anas platyrhynchos wyvilliana*), new to the collection, has been presented by the Severn Wildfowl Trust; a Cape Teal (*Anas capensis*) by Mr. Terry Jones, and a pretty Tree Sparrow, the Cinnamon (*Passer rutilans cinnamomeus*) by Mr. Trevor Crewes. A Leadbeater's Cockatoo (*Kakatoe leadbeateri*); a Southern Puffin



(*Fratercula arctica grabae*), and two Northern Guillemots (*Uria aalge*) have also been presented.

An interesting parrot probably not seen in this country for many years, and called variously the Red-throated, White-fronted, or Jamaican (*Amazona collaria*), and a Red and Yellow Macaw (*Ara chloroptera*) have been deposited; an Illiger's Macaw (*Ara maracana*) received in exchange and a Bengal Pitta (*Pitta brachyura*) purchased.

Three Sun-birds new to the collection have been received from Messrs. Seago and Bloom; they are the Kenya Violet-backed (*Anthreptes longuemarei orientalis*); the Abyssinian Mariqua (*Cinnyris mariquensis osiris*), and the Somali Scarlet-chested (*Chalcomitra hunteri*).

A single egg of the Ceylon Fish Owls which have nested unsuccessfully during several previous winters again proved infertile, as have six Emu eggs, the seventh containing a chick which died at an early stage of development.

Two Black-footed Penguins have so far been reared, and the Great Eagle-Owls and New Zealand Sheld-Duck are now nesting.

\* \* \*

## BRITISH AVICULTURISTS' CLUB

The thirty-seventh meeting of the Club was held at the Rembrandt Hotel, Thurloe Place, South Kensington, S.W. 7, on Wednesday, 11th March, 1953, following a dinner at 7 p.m.

Chairman: Miss P. Barclay-Smith.

Members of the Club: Mrs. J. R. Alderson, H.G. the Duke of Bedford, B. Benedict, Miss K. Bonner, Mrs. V. M. Bourne, Captain A. Clarence, G. T. Clark, Mrs. G. T. Clark, Mrs. F. D. Cooper, T. Crewes, P. L. Dabner, Sir Godfrey Davis, W. T. Dring, Mrs. W. T. Dring, B. H. Dulanty, O. E. Dunmore, A. Ezra (Patron), J. F. M. Floyd, J. C. Garratt, W. O. Gilbert, Mrs. W. O. Gilbert, T. Goodwin, F. Grant, H. J. Harman, Dr. E. Hindle, Major E. F. Housden, G. T. Iles, F. E. B. Johnson, F. T. Jones, Miss M. H. Knobel-Harman, J. W. Lester, D. R. Lovell, C. J. Morny, G. S. Mottershead, H. Murray, S. Murray, K. A. Norris, S. Porter, A. A. Prestwich, D. M. Reid-Henry, R. C. J. Sawyer, J. L. Sears, D. Seth-Smith, K. J. Smith, E. O. Squire, P. Sutton, J. A. Swan, R. A. Taylor, E. H. Tong, E. N. T. Vane, C. H. Wastell, Professor J. Wheatley, Mrs. J. Wheatley, H. Wilmot, J. J. Yealland.

Guests of the Club: Field-Marshal the Viscount Alanbrooke, Professor J. Berlioz.

Guests: Mrs. M. E. Armitage, D. S. Armitage, Miss A. J. Avery, Dr. K. W. Aylwin-Gibson, J. Bailey, P. Bates, Mrs. B. Benedict, Dr. C. P. Blacker, P. B. Bloomer, Miss J. Crone, J. Culihan, W. Cummings,



Lady Davis, Miss I. Dix, Miss K. Dring, T. W. Dring, L. Ellis, Commander R. Eyre, Mrs. R. Eyre, Mrs. J. C. Garratt, Miss H. Gentry, Mrs. F. Grant, Mrs. E. F. Housden, Miss M. Kirkby-Mason, F. W. Luck, H. M. Luther, P. Marshall, Mrs. N. Masters, Mrs. R. Maurice, Mrs. C. J. Morny, Mrs. S. Murray, R. N. Sanders, Mrs. R. N. Sanders, Mrs. D. Seth-Smith, Mrs. R. Sharpe, Mrs. P. Sutton, Mrs. J. A. Swan, Mrs. R. A. Taylor, Mrs. E. H. Tong, Miss M. White, Mrs. H. Wilmot, A. J. Woods, Mrs. I. Wren.

Members of the Club, 56 ; guests, 45 ; total, 101.

The Chairman, opening the meeting, said she had very great pleasure in welcoming Professor Berlioz, of the Paris Natural History Museum, who was the world's foremost authority on Humming Birds. Professor Berlioz, in response, said he was delighted to have the opportunity of attending a Club meeting.

On introducing Viscount Alanbrooke, the Chairman said the Club greatly appreciated that amidst his many official duties he had found time to pay a second visit. The appreciation was the more obvious by virtue of the fact that the attendance was easily a record.

Viscount Alanbrooke showed his two new colour films, "Waders" and "The Flamingoes of the Camargue". The former, taken on Hilbre Island, Dee Estuary, showed a large variety of wading birds. The sequence of a Curlew preening with salt water was of special interest. Viscount Alanbrooke gave an amusing account of the difficulty experienced in locating the Flamingoes. Due to disturbance, possibly by low flying aircraft, they had moved to new breeding grounds. The Camargue is apparently threatened by various reclamation schemes, but French ornithologists will, of course, make every possible effort to preserve this exceptionally interesting area.

There were some good slow-motion pictures of Flamingoes in flight ; and in the close-ups it was interesting to note the striking variation in the size of nesting birds. There were also some good shots of the Bee-eater.

The excellence of the films was only matched by the commentary, and at the end the large audience showed by its sustained applause that it had indeed appreciated Viscount Alanbrooke's efforts.

The next meeting of the Club is on **13th May, 1953.**

ARTHUR A. PRESTWICH,  
*Hon. Secretary.*

\* \* \*



## NEWS AND VIEWS

The Ministry of Agriculture and Fisheries (Animal Health Division) has decided to reimpose the ban on the importation of Parrots. The Order, "Parrots and Miscellaneous Birds (Prohibition of Importation) Order, 1953," came into force on 16th February, 1953. Copies of the Order, price 2d., may be obtained from H.M. Stationery Office, York House, Kingsway, W.C. 2.

Until further notice "No person shall import into Great Britain from any other country or part of a country any bird to which this Order applies", namely, "live birds of any of the following descriptions, that is to say—birds of the species Psittaciformes, including any of the birds commonly called parrots, parrakeets, budgerigars, lovebirds, macaws, cockatoos, cockatiels, conures, lories, and lorikeets."

In addition to preventing the spread of ornithosis (sometimes called psittacosis), the regulations are aimed at safeguarding the country's poultry flocks against the introduction of fowl pest from abroad.

\* \* \*

Peter Scott, accompanied by his wife, has flown to South America. They are bound for Tierra del Fuego, where, during the next two months, they will study the breeding habits of certain South American waterfowl—especially the Bronze-winged and Torrent Ducks.

\* \* \*

W. H. Turner writes: "Sir Edward Hallstrom now has eight hybrids from Hooded cocks and Many-coloured hens: the result being so much like the Paradise Parrot it is hard to tell the difference between these and a mounted skin of the Paradise. At present they are only young, but by appearance there seems to be male and female in them. It is, of course, not yet possible to tell whether they will be fertile and it will be interesting to follow on with the breeding."

A. A. P.

\* \* \*

## REVIEW

LOVEBIRDS AND PARROTTLETS. By L. P. LUKE. *Cage Birds*, London, 1952. Price 8s. 6d. net.

The host of birdkeepers to whom Lovebirds and Parrotlets have recently become available for the first time will find much to interest and instruct them in the proper care and management of these delightful subjects in captivity in Mr. Luke's new book.

It is somewhat confusing, however, when the author points out the well nigh impossibility of sexing certain species and then paradoxically proceeds to enumerate eight features to enable one to determine the



sexes, some of which have proved quite unreliable. Similarly, he quite correctly states that the Peachfaced has no eye-ring, yet the colour plate shows a distinct white area round the eye. On this plate the Redfaced appears to be an undersized Peachface and the eye-rings of the Blackcheek and Masked are comparatively too small.

Several historical facts are not correct. The Blue Masked first appeared in this country some four or five years prior to its arrival in the United States. The Lutino Nyasa has never been bred in this country. The Blackcheek, far from being the most commonly met with to-day, is along with the Madagascar and Nyasa, practically unobtainable owing to export restrictions in its country of origin, no importer secured a consignment during the raising of the ban.

Such inaccuracies must lead to confusion among beginners and irritation to more knowledgeable readers; a great pity in view of the invaluable worth of the chapters on management, aviary construction, and behaviour in captivity.

E. N. T. V.

\* \* \*

## NOTES

### BARBARY DOVES

Mr. Derek Goodwin's interesting article on the Barbary Dove brought to mind my early and pleasant experiences with this species.

In California they are very frequently sold under the name of Ring-neck Dove. As they are very cheap to buy they are often the species the novice first undertakes. They were among the first birds I purchased as a very young boy—and I can well remember my first pair costing the sum of a dollar—a rather sizeable sum for an eleven-year-old.

My one pair bred well and in a short period of time I had many more Barbary Doves than I could possibly use. Because most pet stores were already filled to overflowing with them (what price must dealers have paid for them to sell a pair for a dollar?) it was virtually impossible to get rid of one's surplus.

We used to let a few out in the garden—and they stayed very well. Unfortunately for the Barbary Dove the cats would invariably reduce their numbers. The Barbary Doves aided and abetted the cats in their destruction by conveniently sitting on garage and aviary roofs—"sitting ducks" for their enemy.

One fall, when we had about eight youngsters to dispose of, we caught them up and released them on a ranch some six miles away. This ranch was in a locality where California Quail and the California Mourning Dove abounded, and so it was felt that the Barbary Doves would have a good chance to succeed. Their homing instinct was nil for none of the eight returned to their home aviaries. Whether any of the released birds lived and/or bred I am unable to say.

Occasionally one sees a Barbary or two in with groups of other pigeons or doves. At the San Juan Capistrano Mission (some seventy miles from Los Angeles) the Barbary Dove apparently breeds right at the Mission. The Mission gardens abound with pigeons and also a few Barbary Doves—all very tame as they are constantly fed by visitors. In downtown Los Angeles' Pershing Square I have seen Barbary Doves associating with common pigeons—and apparently thriving.

I might add that we formerly raised many hybrids between a male Barbary and a female California Mourning Dove. The Mourning Dove we inherited from a friend who had found it with a damaged wing. The wing healed, and the bird (which had been kept in an outside aviary) refused to leave when it was released.



Instead it brought back a mate and we trapped the pair and subsequently reared many young. The youngsters were usually released and they would generally stay for a few days and then wander away. When the male Mourning Dove died we replaced him with a male Barbary Dove, and this arrangement certainly suited the hen for they instantly began family operations.

It might be of interest to note that this female California Mourning Dove was a known eleven years old when she finally died. She bred right up to her death, though in her last years sometimes only a single chick would be raised.

The Chinese Necklace Dove is firmly established around the Los Angeles area. I see it very frequently—and it certainly appears to be as common as the local California Mourning Dove, at least in our locality. It not infrequently associates with the Mourning Dove, small mixed groups of four, five, or six being seen feeding in vacant lots, etc. The Chinese Dove appears rather intelligent for pairs around frequently fly into our garage for spilled grains—a feat the local Mourning Dove has never accomplished.

The Chinese Necklace Dove is a very desirable addition and doubtless a good sporting bird. There is a pair which nests in a pear tree in our yard—and they usually nest several times a year.

From memory I believe a rather detailed history of this bird in California has recently appeared in the *Condor*, Journal of the Cooper Ornithological Club.

DAVID M. WEST.

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## CORRESPONDENCE

### THE PROBLEM OF THIRD BROODS OF PARRAKEETS

In regard to Mr. Boosey's letter about Turquoisines, I certainly should not attempt to haul a nest-box out of the aviary when the young are at their wildest stage.

There are however, methods of avoiding undue damage to the young and at the same time of preventing the hen from rearing a third brood.

With the rarer and more timid Grass Parrakeets I am coming back to my original view that the roof of the aviary should have an inner lining of string netting and, in addition, before the young of even the first brood have left the nest, a good thick screen of branches should be tacked on to the wire-netting over the whole end of the flight to prevent them crashing against that.

Coming now to the problem of the third brood, when the second brood are still in the nest and the hen has not yet started to lay her third clutch, you can remove the cock and also, if you like, the second nest-box. In order to encourage the hen to make a good job of finishing feeding the second brood single-handed, she should be given more hemp than it is usually safe to give Turquoisines and also an abundant supply of the choicest seeding grass. The cock should be placed in a cage in the bird-room and fed on very plain seed and green food, a combination of circumstances which will encourage him to go out of breeding condition and start moulting. He should not be put in another aviary as he will be more restless there and call continually to the hen and he may also, very likely, pick up some deadly microbe, as late summer is the time when these pests are most virulent. When the right time is thought to have arrived to take the young birds away from their mother (they have got to be moved *some* time), you can also remove the nest-box and put the cock back with his mate and she, too, will not be long in dropping into moult while the weather is still good.

An alternative plan is to leave both parents in the aviary and, when the last young one of the second brood has left the nest a few days, go in and net the whole brood as quickly as you can before they have time to do themselves serious damage. Put them in a cage in the bird-room and cover the whole floor of the cage with seed and seeding grass and keep the bird-room at a comfortably warm temperature. There is little doubt, if they are healthy and well-reared, that they will start feeding adequately as soon as they begin to get hungry but, if you like, you can put with them a young Budgerigar which has started to feed itself freely, in order to give them a lead. When



they are feeding freely and have steadied down a bit they can be put back in an aviary, being first confined to the shelter for a day or two so that they grow accustomed to it and know where to find the food. It is, of course, necessary that their new aviary should have the same arrangements with regard to protection of the roof and end of the flight. There they can remain happily until they moult into adult plumage and begin to quarrel ; or (as is much more likely, as Mr. Boosey is as well aware as I), until they die of pneumonia or nephritis ; get clawed by a sparrowhawk ; or fall a victim to X's latest practical joke ! When the young are out of the parents' aviary, you can, of course, remove the nest, and the third clutch of eggs which Lovebirds may take if you have any.

Mr. Boosey mentions a hen he has had for several years which has reared three broods each season, but can he tell us how many hens he has lost before they have put up this satisfactory record and how many young of the third broods have matured into good breeding stock ?

There are, no doubt, hundreds of hen Budgerigars which have reared three or more broods in a season and survived for a reasonable period, but that does not alter the fact that it is the almost universal practice of breeders who want to produce stock of the highest quality to limit the number of nests to two.

BEDFORD.

CROWHOLT, WOBURN,  
BLETCHLEY, BUCKS.

#### FOOD OF PARRAKEETS

I was very interested in what Mr. E. J. Boosey had to say about sweetened rice and milk as a food for his Plum-headed Parrakeet as this corresponds with my own experience in India.

When I was at Karwar, a very lovely place on the west coast of India, I had some young Malabar Parrakeets brought to me which had been fed on the usual diet of parched gram flour, moistened with water. They seemed too far gone to help, but I remembered an article by Dr. Amsler in which he described how he had fed his breeding Swainson's Lorikeets on boiled rice and milk and honey sugar. I, therefore, got Fernandes, our cook, who was very interested in birds, to make me some rice mould sweetened with brown sugar. I do not think the fact that the sugar was brown made any difference. Two of the little things were too far gone to save, but the two stronger ones ate this new food avidly and grew into fine birds. I used this food also for some tiny Hanging Lorikeets and they thrived upon it.

I have often thought the diet of hard grain inadequate for Parrakeets. The Malabar Parrakeet, so far as my experience goes, is a forest lover, and I should think that its diet consists far more of soft wild fruits than hard grain. Incidentally, I think I am the person to whom Mr. Boosey refers in one of his articles, who told him about the breeding of the Grey Parrot in India. It only shows what an unbelieving fellow Mr. Boosey is and what a bad judge of character he was, in this particular case.

BERESFORDS,  
BOUGHTON MONCHELSEA,  
Nr. MAIDSTONE, KENT.

GODFREY DAVIS.

#### THE COLLARED TURTLE DOVE

MADAM,—May I return to the subject of the letter from Mr. I. J. Ferguson Lees (*antea*, 1952, 58, 194), the Collared Turtle Dove, *Streptopelia decaocto* ?

These are once more being offered for sale in this country.

Meanwhile the spread of the wild species through Europe continues ; it has now bred in Sweden and has reached the Ardennes in Northern France. If any reach Britain it is of the greatest importance that they should be protected from confusion with escaped or released imported birds.

In Germany quite a number of wild Collared Turtle Doves have already been ringed, and two have been recovered (both show that first-year birds can travel long distances) ; so may I suggest that all those who purchase Collared Turtle Doves, whether they intend to keep them at liberty or not, should mark their birds with coloured, not aluminium, rings.

JAMES FISHER.

OLD RECTORY, ASHTON, NORTHAMPTON.



THE AVICULTURAL SOCIETY RECEIPTS AND PAYMENTS ACCOUNT

*Year ended 31st December, 1952.*

[illegible]

I have examined the  
verified the Bank Balance.

J. WATKIN RICHARDS, } *Hon. Auditor.*  
*Certified Accountant.*

19th February, 1953.



## CANDIDATES FOR ELECTION

- F. BAILEY, 54 Lynwood Grove, Audenshaw, Manchester. Proposed by Miss K. Bonner.
- A. J. CLARKE, F.R.I.C.S., Foxhole Cottage, Llanbedrog, Nr. Pwllheli, S. Caernarvonshire. Proposed by F. E. Thomas.
- M. S. COOMBER, Valenciennes, Burwash, Sussex. Proposed by H. A. Fooks.
- Mrs. F. D. COOPER, Dunstan Lodge, Churchdown, Gloucester. Proposed by Miss K. Bonner.
- J. CORLETT, Rt. 6—Box 647, Mobile, Alabama, U.S.A. Proposed by A. A. Prestwich.
- K. DVORAK, 305 N. Kilbourn Avenue, Chicago 24, Ill., U.S.A. Proposed by D. M. West.
- S. EFROS, 4907 Rodeo Road, Apt. 1, Los Angeles, Calif., U.S.A. Proposed by A. A. Prestwich.
- R. H. GOPSILL, 152 Wyggeston Street, Burton-on-Trent. Proposed by Miss K. Bonner.
- Mrs. D. A. HOBSON, Warren Cottage, Totland Bay, Isle of Wight. Proposed by Miss K. Bonner.
- D. A. HOLTER, 221—31st Street, Manhattan Beach, Calif., U.S.A. Proposed by W. B. Frostick.
- C. M. JASAWALLA, "Hill Crest," 14 Salisbury Park, Poona, India. Proposed by Abde Tyebjee.
- Mrs. M. KERSLEY, Ketleys, Rosemary Lane, Flimwell, Nr. Hawkhurst, Sussex. Proposed by H. A. Fooks.
- D. J. MACPHIE, Hazel Cottage, Petersham, Surrey. Proposed by Miss K. Bonner.
- T. MAUGHAN, 77 Calton Avenue, Dulwich, S.E. 21. Proposed by A. A. Prestwich.
- L. G. MIDDLETON, Stack House, Old Green Lane, Garstang, Lancs. Proposed by Miss K. Bonner.
- J. P. McHALE, 1526 W. Highland Avenue, Chicago 26, Ill., U.S.A. Proposed by A. A. Prestwich.
- E. T. PALMER, 4595 Picton Street, Vancouver 16, B.C., Canada. Proposed by Miss E. Lemon.
- E. RICHARDS, 5 West Lane, Pengelly, Delabole, N. Cornwall. Proposed by A. A. Prestwich.
- J. F. SIMÕES, 5 Largo Cone Barão, Lisboa, Portugal. Proposed by A. A. Prestwich.
- T. STEWART, 33 Jeffrey Avenue, Parkfields, Wolverhampton, Staffs. Proposed by Miss K. Bonner.
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# AVICULTURAL MAGAZINE



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D. M. HENRY

SCARLET-TUFTED MALACHITE SUNBIRD.



# AVICULTURAL MAGAZINE

THE JOURNAL OF THE AVICULTURAL SOCIETY  
AND THE AVICULTURAL SOCIETY OF AMERICA

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## THE SCARLET-TUFTED MALACHITE SUNBIRD

(*Nectarinia j. johnstoni*)

By JOHN YEALLAND (London, England)

The Scarlet-tufted Malachite Sunbird was first obtained by Sir Harry Johnston on Kilimanjaro in 1884. An account of the species together with a coloured plate of an adult male appear in Sir Frederick J. Jackson's *Birds of Kenya Colony and the Uganda Protectorate*, vol. 3.

Mr. John C. Williams has contributed a valuable paper "*Nectarinia johnstoni*: a Revision of the Species, together with Data on Plumages, Moults and Habits," (*Ibis*, 93 1951, pp. 579-595) in which he demonstrates (in agreement with Sclater) that there are three races: "*N. johnstoni* is therefore separable into *N. j. johnstoni*, a long-winged, long-billed form with green metallic plumage in the males; *N. j. salvadorii*, a short-winged, short-billed race, also with green metallic plumage, and *N. j. dartmouthi*, a long-winged, short-billed race with bluish-green metallic plumage in the males and dark brown females."

*N. j. johnstoni* is most common on the alpine moorlands of Mount Kenya from about 11,000-14,000 feet on the western side and from 10,000 to 10,500 feet on the eastern slopes—wherever the Giant Lobelia (*Lobelia keniensis*) is in bloom.

Of the diet, Mr. Williams says, "The main food of the typical race is Diptera, small flies forming the bulk (ca. 85 %) of the contents of the 28 stomachs examined. Also included in the stomach contents, in order of frequency, are the following: minute Coleoptera; spiders; unidentified insect (?) fragments; yellow vegetable matter (?); pollen (once recorded). Nectar was almost certainly present, but was difficult to detect."

Of the roosting habits he says, "On several occasions old birds were observed to retire to roost in deep holes, excavated originally by the



Mountain Chat (*Pinarochroa sordida*) in the matted dead leaf clusters of the Tree Groundsel (*Senecio keniodendron*). These holes, which must give much protection to this sunbird during the bitterly cold nights, are sometimes, perhaps as a rule, used communally, as on one occasion two females and a male were seen to enter a cavity within a few minutes of one another. Immature birds were seen to enter disused nests for resting and warmth."

It appears that the normal clutch is one egg only. There is an eclipse plumage in *N. j. johnstoni* and *N. j. salvadorii*, but it appears doubtful whether this occurs in *N. j. dartmouthi*.

Some of the *N. j. johnstoni* (which is new to aviculture) were collected on Mount Kenya by Mr. R. Bloom, and those kept at the London Zoo have been thriving on the usual Sunbird food together with house flies. One male which has spent the past winter in an outdoor aviary (with a heated shelter) was often outside and singing in quite cold weather.

\* \* \*

## NOTES ON THE TRIP TO COLLECT THE SCARLET-TUFTED MALACHITE SUNBIRD (*NECTARINIA JOHNSTONI JOHNSTONI*) FROM MOUNT KENYA

By REGINALD T. BLOOM (Ludham, Norfolk, England)

The idea of catching the Sunbird, *Nectarinia johnstoni johnstoni*, first came into being when talking with Lord Chaplin one evening. As a result of modern travel the comfort of an English fireside was soon exchanged for the lower slopes of Mount Kenya, on whose high moorlands this bird makes its home, and my small mule safari was moving ahead of me, following one of the many game trails which lead upwards into the dim shadowy depths of the Giant Cedar forest.

Thousands of Parrakeets screeched high in the trees overhead; a Hartlaub's Touracou was flushed off a low branch, showing its crimson wings; Hornbills hooted in the higher branches, whilst dragonflies and butterflies hovered over the thick beds of nettles. It was an eerie journey, the Podo trees creaked and groaned and the breeze rustled through the high branches, admitting rays of sunlight which formed strange moving patterns on the green below.

Gradually the way became steeper, ridges and deep valleys formed, some with little streams running down them, but the game tracks followed the ridges closely, making a track for us. Although there were



many signs of game, five elephants were the only big game we saw. Soon the larger trees thinned and small glades bathed in sunlight were a warm and cheerful change from the darkness, and a suitable place suggested rest and food before entering the thick bamboo forest which would engulf the remainder of the trail.

The bamboo forest commenced at about 9,000 feet and seemed to swallow us and shut its mouth behind us, so sudden was the change. It was darker and colder, with a damp, penetrating cold which chills to the bones, and because of the stillness it was at times almost frightening. It seemed as if the ground had sprouted a whole forest of organ pipes which, draped in soft green lichen, rose about 40 feet, to interlace grotesquely and form a series of arches resembling some vast witches' kitchen. These trees were placed so thickly that game trails formed the only means of passage, and even then a way often had to be cleared before the mules could pass. Their bulky loads suffered hard treatment, and when they became entangled with the bamboo it snapped with a sound like a shot which would echo through the forest.

It was a long four hours before the highest edge was finally reached but, as suddenly as it had begun, this dense forest ended, the silence and the darkness were behind, and they were replaced by the evening sunlight and bird-song. The altitude was now about 10,000 feet and the ground became more level, the country resembling an English woodland scene with large oak-like trees draped with creepers. There were bushes of feathery bamboos and clumps of brightly flowering salvia (*Leonotis*) on which hundreds of Goldenwings, Bronzy, and Malachite Sunbirds were feeding.

These birds were fighting and squabbling, and there was a continual noise of angry chattering. Their nests were hanging like large cocoons both from the young bamboos and from the *Leonotis*, which grew to a height of about 15 feet.

Now it was possible to look down over the green forest belt to the golden plains below, rising and falling in broad undulating curves until they joined the Aberdare Mountains, 50 miles away. The tent was pitched snugly in an elbow of the forest before the sun sank behind the near-by hills. As supper was cooked in the embers raked from an enormous log fire the frost fell and the wind blew bitterly cold, so that one froze on one side and roasted on the other. In the morning the small tent was frozen like a board and the trees and ground were covered with a thick hoar frost which crunched underfoot.

The camp was kept in the shelter of the forest edge, which ended abruptly and gave way to open moorland. This moorland continued from about 11,000 feet until it reached the snows at 15,000 feet, and it was crossed by rugged ridges and steep, stony valleys, leading upwards towards the massive glaciers and snowy peaks. The snow gleamed brightly in the morning sunlight which, creeping over the mountain's



northern shoulder, lit the high ground in the plains below, until eventually all was flooded with a soft golden light.

The tops of the ridges were covered in tree heather, *Protea* bushes, and hundreds of brightly coloured flowers. On a *Protea* bloom the first *Nectarinia johnstoni* was seen. It was a cock in full breeding plumage; its metallic green glistened, while its long, ribbon-like tail waved in the breeze. It appeared to be less fidgety than other Sunbirds, feeding quite unconcernedly, digging its bill into the petals of the flower in search of the minute green beetles found on this plant, and occasionally whistling to its mate. These birds showed a fondness for bathing and could often be seen washing themselves as the top of the ice began to melt from the puddles, or even breaking the ice on water which had collected in the lobelia leaves so as to splash in that.

Suddenly a hen flew off a small egg-shaped nest built in the fork of a near-by heather bush about 4 feet from the ground. The nest was entered through a small hole in the end, the hole was facing away from the prevailing northerly wind, and investigation proved that it was lined with the furry down of the *Protea* seed pod.

During the next few days twenty nests were found, of which one contained a single egg, seventeen a single chick, and two were empty. All the nests were built in sheltered places, usually in heather bushes, but there was no attempt to camouflage or conceal them. The single egg was pink in colour and covered with dull red spots, these spots being grouped more thickly at the broader end; in size the egg was similar to that of a sparrow.

Each pair of *Nectarinia johnstoni* appeared to have their own territory; this seemed to extend for about 200 square yards, and the birds defended it vigorously. Should a territory be invaded by another cock a terrific fight ensued, the two chasing each other at a truly amazing speed, at times flying straight upwards until completely out of sight. After this had happened the victor would glide slowly back, his breast puffed out and his tail trailing high behind.

Both cock and hen fed the chick, which left the nest as soon as it was able and fluttered from flower to flower, squatting from time to time with its wings drooped and quivering.

On the higher moorlands, where the giant lobelia and giant groundsel grew to a height of approximately 9 feet and resembled fields of gigantic brussel sprout stalks, the birds were found in large numbers, even as high as the permanent snows. The sunshine at this height was quite warm, but as soon as the sun was covered by cloud it became bitterly cold. These moorlands resemble those of Cumberland, having the same windswept bleakness, and they are often blanketed in heavy cloud, so that at times all is grey and dull. When the clouds pass over, brilliant sunlight lights up the flowers and bushes, and the snow of the mountain peaks gleams white against a deep blue sky.



The Kenya Malachite was the only other Sunbird seen on the moorland and it was quite easily distinguished because of its lighter colour and its more slender body. It was never allowed to stay for very long, being immediately chased off by the *Nectarinia johnstoni*.

It was noticed that the birds left the higher moorland near the snows in the later afternoon and were seen in quantities on the lower slopes just above the forest about four o'clock, whereas during the day only the pairs were seen here. A number of fights seemed to take place on the arrival of these daily migrations to the lower slopes.

Once captured, these birds could be examined more closely, but a detailed description of them has already been published by John G. Williams (*Ibis*, 93, 1951). They were found to accept captivity readily, and in three days would take food from the hand. The return journey was so arranged that the bird boxes were carried by hand and not by mule. Frequent stops had to be made so as to rest and feed the birds. After a short stay at the base camp the birds commenced their air journey to London, where all arrived safely.

\* \* \*

## THE UNEXPECTED

By THE DUKE OF BEDFORD (Woburn, Beds, England)

Psychological abnormalities in birds which involve a profound departure from the usual instincts of their species are always interesting. This year for the first time I have had a case of two hen Budgerigars not only sharing the same mate, which is fairly common, but also the same nest box, which is much less so. As a rule a hen Budgerigar is violently jealous of another hen approaching her nest, and any friendship which two hens may have formed prior to matrimony rapidly dissolves when the boxes are put in. When the nests went into an aviary containing about nine pairs of homers, lively, though not dangerous, squabbles were for a time the order of the day. To my surprise, however, I noticed that in the midst of the turmoil of female conflict a white-blue and a cobalt hen were remaining the best of friends, rubbing noses and examining two adjacent boxes with the most complete good will. The cobalt gave way at times to the white-blue, but there was always civility on both sides. Any other hen, however, who approached their boxes was promptly attacked by one or both of the friends. That it was not a simple case of two birds of the same sex achieving a "pair formation" relationship was, however, shown by the fact that both hens accepted a yellow cock as their mate, and were as friendly towards him as towards each other. For a time I thought that the cobalt



and the white-blue, in spite of their friendship, would end by each taking one of the two boxes to which they had staked out a claim, but suddenly they decided they could not be parted; allowed a weaker hen to take possession of one of their boxes; and laid and incubated side by side in the other one. The yellow cock obviously enjoys having two wives, but if they present him with twelve children he will learn that after supper comes the bill!

While this odd domestic problem was developing inside the aviary a different one was being staged on a pond outside. Two full-winged Carolina drakes had for many months enjoyed a bachelor friendship which they found completely satisfying. In March, however, two spinster ducks arrived on the scene and strove earnestly to persuade the drakes to modify their views on matrimony. As far as I can make out, they are not making much headway. Though not actively hostile, the gentlemen are not a bit interested. They are perfectly content to remain as they are, thank you!

\* \* \*

## COMPARATIVE STUDIES ON THE BEHAVIOUR OF ANATINÆ

By Dr. KONRAD LORENZ (Dulmen in Westfalen, Germany)

Reprinted by kind permission from *Journal für Ornithologie*, 1941.

(*Festschrift Oskar Heinroth*)

Translated by Dr. C. H. D. Clarke, Division of Fish and Wildlife, Ontario, Canada

(Continued from p. 34)

### XX. THE MANDARIN DUCK

*Aix galericulata* (L)

#### A. GENERAL.

Doubtless this form is very close to *Lampronessa*, but it is not so close as one might think at first. Still, the separation of the two genera *Aix* and *Lampronessa* seems to me to be inconsistent with classifying together such different birds as the Mallard and the Wigeon in the genus *Anas*.

#### B. THE NON-SEXUAL REACTIONS AND CALLS.

These correspond in general to those of the Carolina Duck. The drake's call-note, however, is not separated from the burp as in the drake Carolina. A very nasal "Pfrriub" takes the place of both calls. When this sound is uttered the hood is ruffled to its greatest extent (Fig. 50). The go-away and nest-hunting call of the duck is very like that of the Carolina, but the drake has, in contrast to the drake Carolina, no corresponding call, at least not so far as I know.



## C. THE SEXUAL REACTIONS AND NOTES OF THE FEMALE.

1. *Inciting*.

This corresponds exactly to that of *Lampronessa*.

2. *The Coquette Call*.

This is louder and sharper than that of the Carolina, a sharp "Kett".

3. *The Flight Call*.

This constitutes an admitted gap in my observations. I am ashamed to say that I do not remember anything about it, neither did I make any notes in my diary on the subject.

4. *The Prelude to Mating*.

This is like that of *Lampronessa*.

## D. THE SEXUAL REACTIONS AND NOTES OF THE DRAKE.

1. *The General Form of the Display*.

The Mandarin drake takes less interest in the presence of the female at the performance of his display than any of the *Anatidæ* that I know. Even more than with the Mallard the social display is an affair of the males. The males place themselves on show quite passively without being the least bit concerned about the presence of females, almost like Blackcocks, Ruffs, and other birds lacking true pair-formation. Correspondingly, in the social play of *Aix* those orientation-reactions in



FIG. 48.—The position taken by the Mandarin drake, *Aix galericulata*, at the beginning of the social-play. Compare with Figs. 9 and 19.

which other drakes, even the Mallard, give attention to the ducks which are present, are lacking, namely the turning of the head and of the back of the head. Only in the mock-preening is the drake oriented toward the duck, but this behaviour occurs very seldom in the social display. In the social play proper, the Mandarin drakes do not court one particular female, just as Peacocks, Turkey Gobblers, Black Game, or Ruffs never do. It is also surely no coincidence that this very species, where the active role in choosing a mate falls so entirely to the female, is at the same time the one with the most highly differentiated showy male plumage.

2. *The Introductory Shaking*.

This plays a very small role. On the other hand, in the drake Mandarin the position from which it takes place in all *Anatidæ* which



have this behaviour, is carried to the extreme. The drawing in of the head, ruffling of the head plumage, etc., is more pronounced than in all other *Anatinæ* (Fig. 48).

### 3. *Drinking and Mock-Preening.*

These have become, in *Aix*, an absolutely linked behaviour-sequence but in the reverse order in which we saw them in the Gadwall. After an exaggerated drinking there follows a mock-preening (Fig. 49a-c) which is more formalized and marked by stronger morphological differentiation than is the case in any other duck. That is to say,

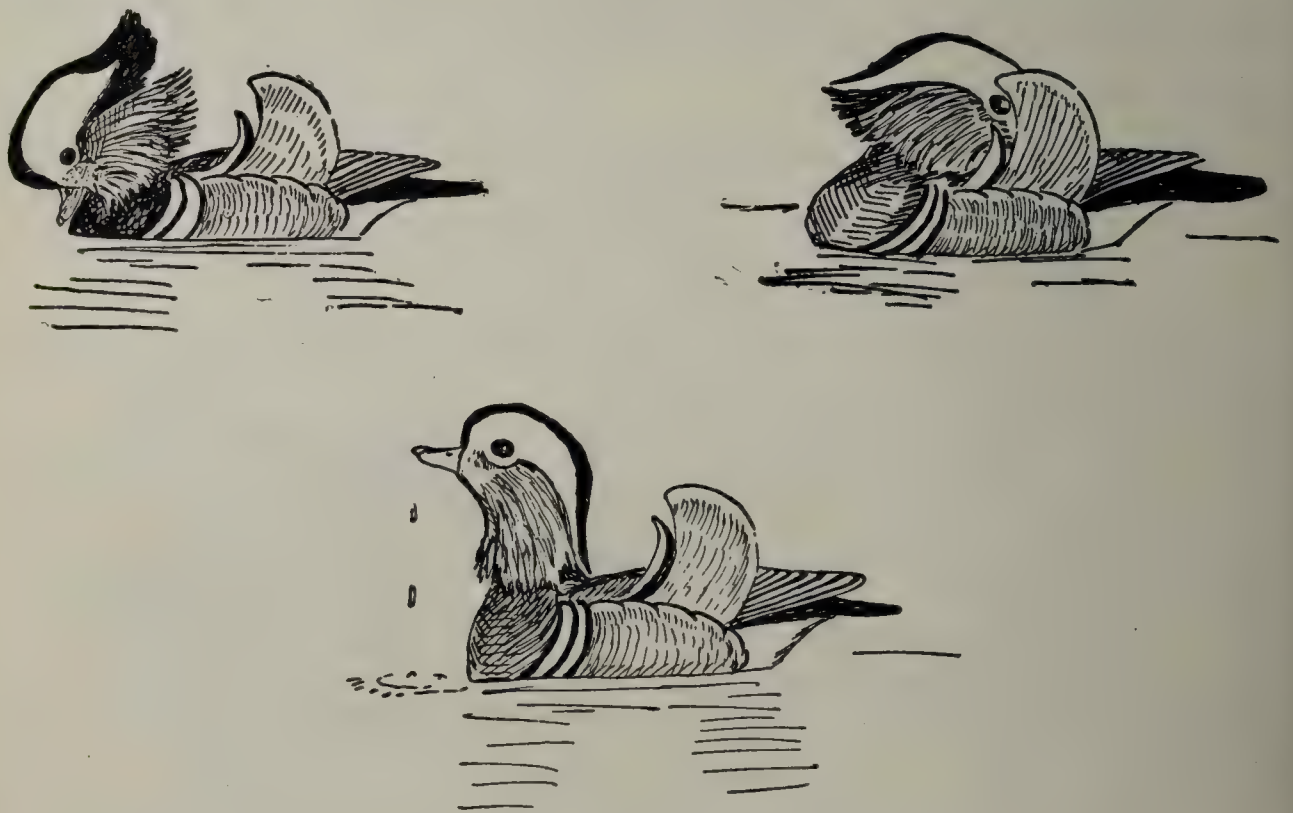


FIG. 49a, b, c.—The Mandarin drake drinking, linked with the mock-preening. Notice how the dark green posterior portion of the hood springs up, making the movement mimic-exaggerated. Compare the position of the plumage with Fig. 50.

the Mandarin drake touches the large rust-red tertiaries which are held up like a sail during every outburst of display from the inner side. The drake performs the drinking-and-mock-preening act very often when he is standing on the shore beside his duck. Then both mates drink at the same time, and thereupon the drake touches his beautiful plume, invariably the one on the side next to the duck. As he drinks his hood moves so that the movement is emphasized thereby (Fig. 49).

### 4. *Burping.*

This is most striking because of the great size of the lifted hood and beard feathers (Fig. 50). The striking feather ball, which is held up so jerkily, looks actually heavy. Simultaneously the drake utters a nasal "Pfrrruieh", exactly at the moment of the maximum tension of the bone-drum. The extreme stretching and arching of the neck, together



with the corresponding movements of the plumage, result in a most grotesque spectacle. It looks almost as if the bird must put his neck out of joint.

#### 5. *Display-Shaking*.

The Mandarin drake has no real grunt-whistle but he displays not less than three different behaviour patterns which have come from mimic-exaggeration of shaking. The first reminds one of the male *Tadorna's* display-shaking. First the head is lowered and then thrust up very high, while a whirring sound is uttered. We can symbolize the sound by these letters: "Fwwwwwww." rrrrrrrrrrrrrrr One should try to pronounce the "w" and the "r" at the same time. It is voiced with this head movement. The hood is very much ruffled.

#### 6. *The Double-Grunt-Whistle*.

This is a behaviour sequence peculiar to the Mandarin drake. It consists of two separate movements both derived from a displacement shaking. After an ordinary introductory shaking, often even without it, the drake dips his bill into the water about 5 cm. from his breast, shaking and squirting and then, continuing to shake, he thrusts it up again. This behaviour differs from an ordinary very hard shaking, such as we have seen in the females of *Aix* and *Lampronessa*, only by the movement being so exaggerated that the bill is actually dipped into the water in a way recalling the grunt-whistle of the *Anatinae* and never occurring in the case of autochthonous shaking. Besides this, in this movement the drake utters a sound which I have designated in my diary as "Gnk-zit", which expresses its similarity with a half-repressed sneeze fairly well. Immediately after this action and always linked to it, there now follows a second, which by its greater differentiation is still farther separated from shaking. With a sharp bend of the head, the bill is lowered vertically so that it dips into the water right in front of the drake's breast. The tendency to lower the head, which we have seen in the ordinary shaking of *Aix* and *Lampronessa*, is here mimic-exaggerated much more than in the previous movement. With a very brief shaking, the very curved neck is now thrust upwards, with which a short sneezing whistle is heard. I suspect that as a matter of fact only one right-left movement takes place, as in the true grunt-whistle of the Mallard and Pintail drakes. The body is not straightened



FIG. 50.—The Mandarin drake's burp. Compare Figs. 20, 24, 39, and 46.



up afterwards. One can say that of these two linked shaking ceremonies the first is barely differentiated from the ordinary introductory substitute-shaking. The second is more differentiated but it has remained, so to speak, half-way to the grunt-whistle. Therefore, both are clearly intermediate forms between a displacement shaking almost unaltered so far as the autochthonous shaking is concerned, and the grunt-whistle of the *Anatinæ*. Thus the derivation of the grunt-whistle from the shaking behaviour is made almost certain by the two connecting links formed by the movements of the Mandarin drake's "double grunt-whistle".

#### 7. *The Combat of the Drakes.*

This forms a very interesting chapter in the ethology of *Aix*. Like the males of many birds that have an extreme social display and extremely fine plumage, the drakes do not fight seriously. The shooting along beside each other, which is so distinctive of the combat behaviour of the drake Carolina and already tends with this species towards ritualization, exists in *Aix* only as a much more purely "symbolic" activity. As such, however, it plays an important role in social play. Heinroth is right in comparing this behaviour pattern of the drakes, as they shoot wildly around each other in this ceremony, with that of a crowd of whirligigs (*Gyrinus*).

#### 8. *The Post-Coital Play.*

This consists only of non-specific gestures of excitement, among which burping, display-shaking, and aiming movements of the head can be named.

### SUMMARY

If one wants to formulate a classification of a group with any real success one must rid oneself once and for all of the idea that a linear arrangement of the forms can really represent the relationship existing between them. Naturally, this is true, too, when we spoke previously of the ducks "about in a line". All animals living to-day are growing branch tips of a "family tree", and can, *ipso facto*, not be derived from "one another". The comparison of their characteristics results, therefore, in an arrangement which can be represented freely by the likeness of a family tree with branch tips like those of a small round-clipped beech or yew tree. They lie all together in one surface, which represents a cross-section through a bush growing outwards at one point *in time*. Just as we can only tell by guessing and judging appearances, because of the thick foliage of the tree which we cannot see through, as to which ends belong to a common branch and how far down they branch from the main stem, so the best systematic arrangement can only give us reasonable speculations about true evolutionary relationships.



I am now going to try to represent graphically, in a tabular diagram, what we have gained through that kind of systematic intuition which I tried to describe in the Introduction as a simultaneous review of as many characters as possible. Only by evaluating all accessible characters simultaneously can we achieve a proper judgment as to the relative value of individual characters. First of all we must make a brief deliberation of a fundamental nature. The similarity of a series of forms, even if the series structure arises ever so clearly from a separation according to characters, must not be considered as establishing a series of development stages. Let one imagine that, out of one common root, a number of forms have grown out, all equally old

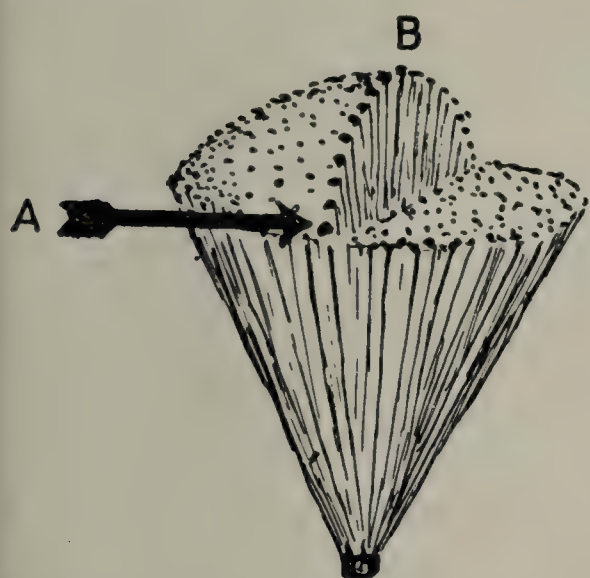


FIG. 51.—Diagram of a series of similarities in recent animal forms whose neighbouring members are not joined by close genetic relationship. When part of the lines of descent fall out, the rest of the forms, lying in the row A-B, can be mistaken for phylogenetic series.

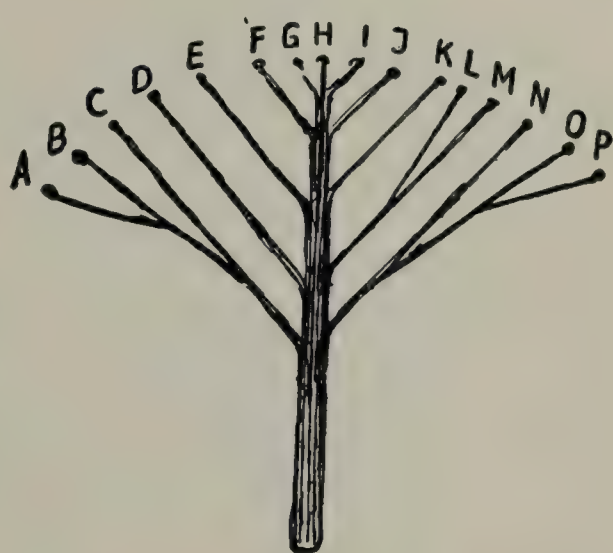


FIG. 52.—Diagram of a series of similarities of recent animal forms, resting on true phylogenetic relationship. Every two neighbouring forms in the row A-B owe their similarities to the part of the path of development that is common to them.

and equally differentiated from the root. We shall represent this family tree structure in Fig. 51 as a kind of shaving brush. Now let us imagine further that, as represented in one half of the brush, part of the hairs have fallen out in such a manner that the rest remain somewhat in the form of a fan. The tips then represent a step ladder leading from A to B, which would seem convincing evidence that the forms have descended "from one another", especially if the degree of differentiation is less on one edge of the fan than on the other. Doubtless the end-points of such a "family tree" have already often been taken for phylogenetical series, which unfortunately, places ever more welcome weapons in the hands of the opponents of the theory of descent. On the other hand, we must not fall into the opposite error to this too ready formation of series and generalize in the view, that all similarity of recent organisms might be explained from the principle of



fan-shaped classified lines of descent, as an over-generalization of Kleinschmidt's theory would imply. Doubtless there are very many cases in which not only a monophyletic development of large groups of animals has taken place, with many individual forms not splitting off till later, but also the further differentiation of the single forms, at least in respect to single characters, took place at such different rates that similarity lines arose as represented in the diagram in Fig. 52. However in observing these similarities which correspond to a phylogenetical staircase *one must not forget for an instant that the term "primitive" may be used only for one or several characteristics of a recent animal form, never for the form as a whole.* Even *Sphenodon*, or *Ornithorhynchus*, is not a "primitive animal". The circumstance that some or even very many characteristics of such a form are quite certainly phylogenetically primitive, does not justify us in the presumption that all the rest of their characteristics are also primitive. The stopping of further differentiation of one character means nothing in respect to the course of differentiation of the others.

The "intuitive feeling" of the professional systematist, which we discussed in the Introduction, is generally well enough developed to decide between similarity series which rest upon a common descent, as has just been described, and such as arise through the previously discussed phenomenon of classified descent-lines arranged in a fan shape. In order to have a more objective criterion for this separation I suggest the following consideration of probability. If one grants that all the representatives of an animal group come from one source, independent and diverging, without nearer connections with each other, as represented in Fig. 51, then one would expect that the similarities of characters which determine the arrangement as to which lines of descent were to be placed side by side, would be divided rather equally over the whole brush. If, for the sake of simplifying the graphical representation we take a longitudinal section of the brush, getting thus a number of fan-shaped, diverging lines of descent, the similarities which bind each form to its systematic neighbour, would have to go through the whole sheaf of lines homogeneously, and especially from every point to both sides, hence, in the three dimensional sheaf diagram, to all sides; binding species with species in like manner.

This type of distribution of characters actually occurs: in all so-called "circles of forms" (Formenkreise) this holds true and Kleinschmidt's theory of family-bushes (instead of family trees) is indubitably correct if applied to these cases. A Formenkreis is nothing else than a "shaving brush" in which the middle part has worn away, leaving a circle of hairs, representing the single forms.

Now if one represents characters held in common as cross connections and arranges the more general, older characters and those



common to the larger divisions of the group toward the base and the others more and more towards the periphery in proportion to the narrowness of their distribution and their degree of specialization and, consequently, their phylogenetic youth, there would be, in the ideal case of the diverging sheaf-like type of species-formation, a classification such as is represented in the diagram in Fig. 53.

Now we shall try to represent graphically, in the manner described, the group *Anatinæ*, using as many of their systematically useful characters as possible, in order thus to form an opinion as to how far their representatives can be put together in groups according to true phylogenetic relationship, and to what extent the evolution of their

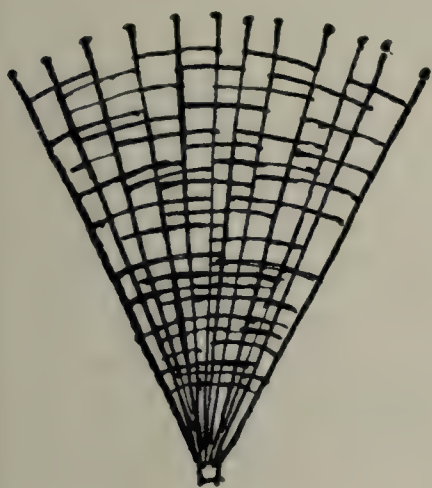


FIG. 53.—Diagram of the division of characters one would expect in unbranched lines of descent, diverging in sheaf-like form. As the variabilities and similarities are explained only by greater or lesser divergence, the distribution of most characters overlaps.

FIG. 54.—Diagram of the distribution of characters which is to be expected when lines of descent branch in the form of a tree. As the connecting characteristics are results of common paths of development, they are divided according to their common descent and do not intersect except for convergences.

species corresponds to the type of the sheaf-form diagram with diverging straight lines in Fig. 51. Although the sheaf of the lines of descent can be symbolized only in three dimensions we shall have to use several flat projections. He who is very particular about clarity may draw them thus and then glue them together so that they fit. I confess that I myself used, for the arrangement of the species, a bundle of stiff wires with thin wires representing "common characters" joining them together into sub-groups.

If one grants that not every species of a group of forms has developed quite by itself, independently from all others, a very different distribution of characters is to be expected. If several forms have only branched from one common ancestor after a long period, we can expect that they have in common such characters as have evolved during that time and that they differ in such characters as each



of them has developed since the time of its branching-off. If two branches grew away from each other very far down we are not surprised if they are connected only by very old characters common to larger group categories. Cross-connections in character distribution, as we have represented in Fig. 53, are not to be expected if, for the time being, we ignore the possibility of convergence. Fig. 54 shows the type of character distribution which is to be expected in a family tree as opposed to the family "bush" represented in Fig. 53.

In species where there is reason to believe that the lack of a character is not primitive but of secondary occurrence, this has been shown by a little cross at the intersection of the character connection and the line of descent. As is clear from the Table, the placing together into groups of common origin becomes more probable the nearer we move to the base of the sheaf of lines of descent, while for very many characteristics of more recent date clear cross-connections in the distribution of characters after the manner of Fig. 53 have yet to be found. Notice, for example, the distribution of the grunt-whistle, head-up-tail-up, and turning-of-the-back-of-the-head.

The few morphological characters, interspersed in the Table, are to show how similar their distribution is, in many cases, to that of behaviour traits. After filling in those gaps, which are especially obvious in the list of species investigated, I plan to construct a much larger diagram, built upon the same principle, in which will be entered all or nearly all the available morphological and behaviour characters, such as the fertility of hybrids. The publication of this Table must above all await the result of comparative studies of the drake's bone-drum, which is so very rich in characters that can be compared. Heinroth has left some unpublished material on this subject, as well as a very complete collection of bone drums.

Even in its preliminary incomplete state our grouping shows clearly the possibility of using the phylogenetic homology concept for characters of inherited behaviour. This fact, which it has been the principal task of my investigation to prove, is of the very greatest significance in comparative psychology.

EDITOR'S NOTE.—Dr. Konrad Lorenz has made a number of alterations and additions to the translation in view of his subsequent work on this subject since the publication of the original German text. The Table which concludes the paper has been re-drawn.



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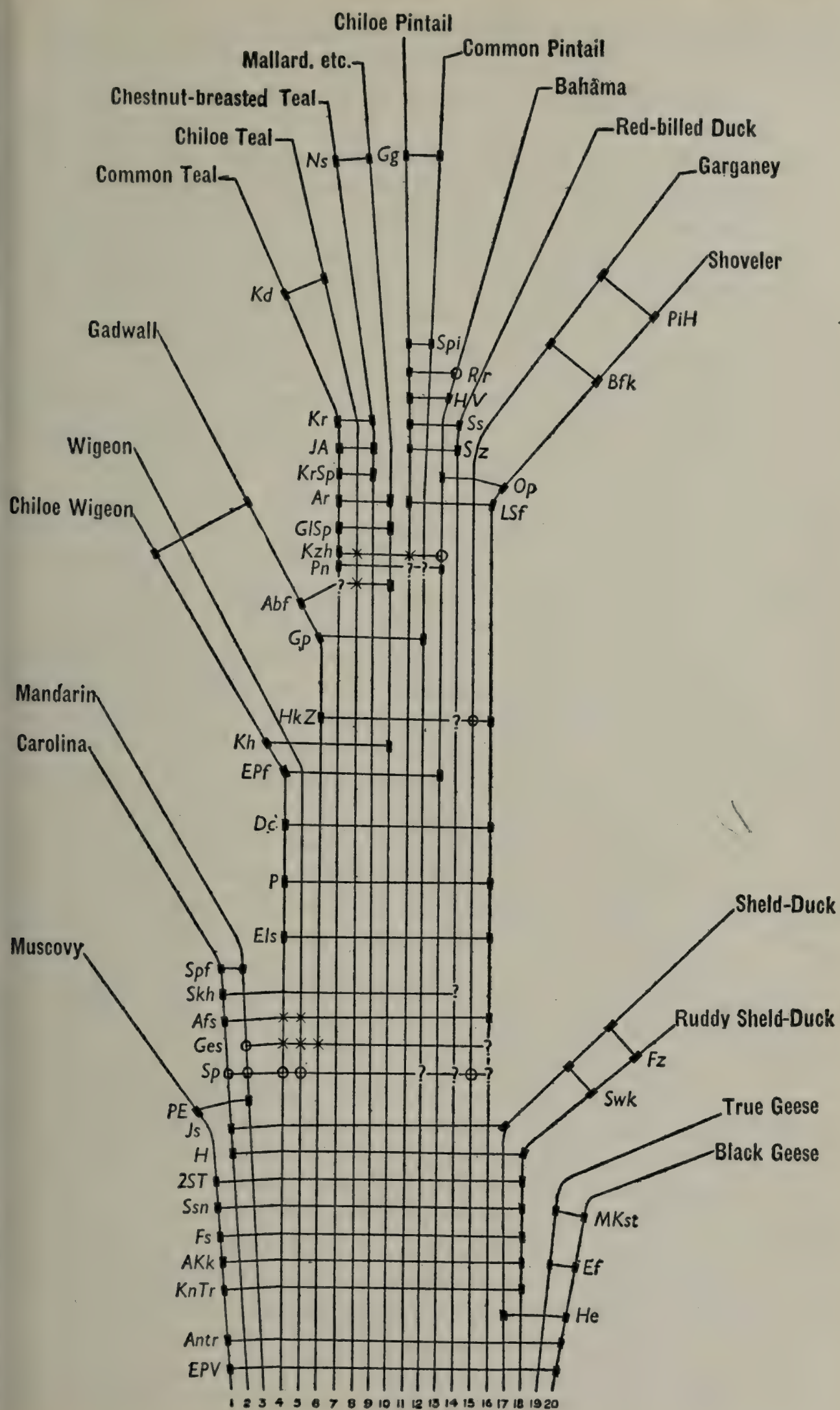
## EXPLANATION OF DIAGRAM

The vertical lines represent species, the horizontal ones characters which are common to these species. A cross indicates that the character in question is lacking in that particular species. A circle indicates an exceptional differentiation of a character in a species, a question mark ignorance of the author.

List of Species.—1 Muscovy Duck, *Cairina moschata*. 2 Carolina Duck, *Lampronessa sponsa*. 3 Mandarin Duck, *Aix galericulata*. 4 Chiloe Wigeon, *Mareca sibilatrix*. 5 Wigeon, *Mareca penelope*. 6. Gadwall, *Chaulelasmus streperus*. 7 Teal, *Nettion crecca*. 8 Chiloe Teal, *Nettion flavirostre*. 9 Chestnut-breasted Teal, *Virago castanea*. 10 The Genus *Anas*, Mallard, Spotbilled Duck, Meller's Duck, etc. 11 Chiloe Pintail, *Dafila spinicauda*. 12 Pintail, *Dafila acuta*. 13 Bahama Duck, *Poecilonetta bahamensis*. 14 Red-billed Duck, *Poecilonetta* (?) *erythrorhyncha*. 15. Garganey, *Querquedula querquedula*. 16 Shoveler, *Spatula clypeata*. 17 Sheld-Duck, *Tadorna tadorna*. 18 Ruddy Sheld-Duck. 19 Anser as a genus. 20 Branta as a genus.

Compared Characters :—*EPV* : monosyllabic piping of lost chick ; *ANtr* : Displacement drinking as a signal of peace *Kn Tr* : Bone drum in the trachea of male ; *AKk* : Duck-like markings of downy chick ; *Fs* : Glossy speculum on secondaries ; *Ssn* : Bill with lamellae functioning as sieve ; *2 St* : Contact-call of chick consisting of two syllables ; *H* : Inciting ceremony in female bird ; *Js* : Displacement shaking as a form of display ; *PE* : "Aiming" Intention movements of the head in pre-copulatory display ; *Sp* : Displacement preening behind the secondaries in the male ; *Ges* : Social display of drakes ; *Afs* : Burping ; *Skh* : The Duck's inciting movement backwards over the shoulder ; *Spf* : Feather differentiations enhancing the function of displacement preening ; *Els* : Preliminary shake ; *P* : Pumping as pre-copulatory movement ; *Dc* : Decrescendo call of the female ; *EPf* : Whistling in the drake ; *Kh* : Chin lifting ; *Hkz* : Turning the back of the head towards the female ; *Gp* : Grunt whistle ; *Abf* : Down-and-up movement ; *Pn* : post-copulatory display with bridling movement ; *Kzh* : Head-up-tail-up ; *Gl Sp* : Speculum identical in both sexes ; *Ar* : Bridling movement ; *KrSp* : Speculum parti-coloured black and green ; *Trkh* : Chin-lifting in the function of a "Triumph ceremony" ; *IA* : Bridling as an independent movement, not coupled with head-up-tail-up ; *Kr* : Teal Whistle (of two syllables) coupled with burping ; *Kd* : Teal whistle independent of burping ; *Ns* : Nod-swimming in the female ; *Gg* : "Geeee" call of true Pintails ; *Spi* : Elongated middle tail feathers ; *RR* : Rolling Rrrr call of female while inciting ; *HV* : Lifting of anterior part of body while inciting ; *Ss* : Markedly wedge-shaped tail ; *Sz* : Marking of bill with light spots on the side ; *OP* : Drake without a whistle ; *Lsf* : Lancet-like feathers on shoulder of drake ; *Bfk* : Small feather of wing light blue ; *FZ* : Small feathers of wing white, speculum glossy green, elbow feathers ruddy ; *SwK* : Down young marked black and white ; *MkSt* : Contact call of young with many syllables ; *Ef* : Downy young uniformly coloured, without sharp markings ; *He* : Dipping of the neck as pre-copulatory display.







## BREEDING SUCCESSES AND FAILURES IN 1952

By H. MURRAY (Brentwood, Essex, England)

From an avicultural point of view, the spring of 1952 opened for me in considerable gloom if not absolute disaster. Indeed, it was not until the autumn that my affairs began to assume a more rosy hue.

Over the years I had noticed that my strain of aviary bred British birds had nested earlier every year, but in 1952 for some reason they began earlier than ever before, and the middle of March saw both Lesser Redpolls and Siskins with nests and the former with eggs. These nests were a good eight weeks before their usual time.

As many people will remember, the end of March was accompanied by a very heavy snowfall which caused the destruction, or brought about the desertion, of many nests of Thrushes and Blackbirds and other early nesting birds. I should imagine that many of the parent birds died as well. It is certainly true that in the area in which I live, a district in which both Thrushes and Blackbirds abound, only two young Thrushes survived from the first round of nests.

In the aviary things were even worse, and all the Lesser Redpolls and Siskins died, both cocks and hens, presumably killed by the cold striking them when they were in breeding condition. By the time I was able to catch them up and bring them in it was too late.

Curiously enough the Bourke's Parrakeets, which are generally regarded as not completely hardy, but which had also gone to nest early, sat closely all through the snow and hatched and reared their young. I am fairly sure that the cock slept out in the open all through that bitter week-end. My old hen Cockatiel also died about this time, and the cock bird was forced to spend the summer as a very unwilling bachelor; but a hen seemed quite unobtainable at that time.

By chance I had obtained a fine hen Orange-headed Ground Thrush, and I thought that I would have a chance to breed these lovely birds, as I already had a good cock bird, but here again my hopes were dashed. The hen by some means best known to herself, wedged herself into a corner of the top of the aviary, and presumably could not get out again, and died there. I brought the cock bird in, but of course another pair of birds had come adrift.

To crown it all, the very night that I released the small birds in the large aviary I had a visit from owls, and lost one or two birds in night frights. Once birds are really familiar with their surroundings owls do not seem to disturb them, but when birds are freshly turned out they are much more prone to panic.

Among the birds injured that night was a very fine cock Yellow-billed Cardinal, one of a pair with which I had great hopes of breeding



this species. He damaged the top of his head, but recovered later, although he made no attempt to breed. I had taken a corner from my large aviary to make a quiet spot for them. Perhaps 1953 will be more fortunate. Before leaving the subject of these Cardinals I would like to mention that these birds have the very un-Cardinal-like habit of hanging upside down on the roof of the aviary in the same manner as tits.

I must confess that by the time the breeding season came round I was strongly inclined to go in for stamp collecting or knitting, or one of the less hazardous pastimes.

About the beginning of May I was in a dealer's shop, endeavouring to make up my pairs of birds, when I noticed an extremely handsome pair of small parrakeets of a kind quite unknown to me, and was immediately keen to own them. As they were rather expensive and I had seemed to spend a lot of money recently on birds, I decided not to buy them but, as any aviculturist will realize, I went back a day or so later and bought them. They were White-eared Conures, and, I should say, a true pair.

I thought a lot of these birds, as they were bright and not too noisy. After a few days I turned them into an aviary containing a nest-box, and was soon very pleased to see them enter. The hen started to sit and the cock slept in the box with her. When after six weeks nothing had been seen or heard of the hen I became very bothered about her, but as the cock still slept in the box I thought that things must be going on satisfactorily. Then the cock sickened, and I went in and looked in the box. The hen was dead and had been for weeks, and the cock, probably owing to sleeping with the dead bird, also passed away.

I feel that having given such a long description of my troubles, it is only right to show a little of the other side of the balance sheet.

The Bourke's Parrakeets, as mentioned earlier in this article, had sat throughout the snowfall. They reared three young successfully in the first round and one in the second. These were all reared without any bother. In my opinion the Bourke's Parrakeet is one of the most charming and attractive of the birds known to the aviculturist. The young are so delightfully tame and will allow themselves to be stroked at feeding time. Also I like the way that the cock bird comes to meet you when he has young birds to feed, and the lovely soft colourings he shows as he flies. Their call too is quiet, and in many ways they work their way into one's affections. I have not kept a very large number of parrot-like birds, but one would have to go a long way to beat a Bourke's as a friendly little pet. Unlike other people, I have not found Grass Parrakeets safe with other birds.

In the summer of 1952 I also had considerable success with Guiana Parrotlets. This little parrot carries no blue except on and under



the wing, the general colour being a medium green. This colour varies over the bird and turns it into an attractive little fellow. The hen is more yellow, particularly on the face. In the eyes of these birds, their greatest glory seems to be the blue on the underside of the wing. When displaying the wings are held away from the body and the blue well displayed. It seems to be a fairly general rule with birds that they show off their more unusual colours when courting, even though in many cases these are not so spectacular as their ordinary markings. The display of the white in the wing and tail of a Chaffinch and the white rump of a Bullfinch are two cases in point.

I obtained the parent birds in the summer of 1951 and no attempt at breeding was made in the first season. When first arrived these birds were very wild. During the winter they were kept in a cage in the birdroom and wintered with no bother. Their cage was actually in the large aviary in which the small birds were wintered, and it was a most amusing sight to watch the behaviour of an odd cock Greenfinch that was in the flight. As the spring advanced he came into full breeding condition, and being without a mate of his own kind decided that the hen Parrotlet would have to do as a substitute. He spent hours against the cage trying to feed the Parrotlet with both the cock and hen Parrotlet screaming with rage at him and trying to grip some portion of his anatomy. Like a wise bird he kept his feet outside or his toes would soon have paid forfeit. Mr. Enehjelm keeps his Parrotlets with his Waxbills and other small fry, and even breeds them in his mixed flights, but my birds seemed very warlike, and with their powerful beaks they seem more than a match for any normal finch.

In May the Parrotlets were let out into an aviary about 6 feet by 4 feet, containing a Budgerigar nest-box partially hidden by a branch of gorse, and it was not long before they went to nest. The first egg was laid about the 11th May, and the hen sat very closely. Apparently the cock fed the hen bird on the nest. Young were heard on the 6th June and, as was to be expected, sounded very like young Budgerigars. The hen continued to sit very closely, with the cock feeding his complete family. Indeed, it was not until just before the young flew on the 1st July that I saw the hen again.

The first brood consisted of three cocks and one hen. The young were easily sexed as there is no immature plumage. The colours brighten as the bird gets older.

The young Parrotlets flew on the following dates, indicating a rather long interval between eggs for so small a bird—1st July, 3rd July, 6th July, 9th July. All the young were perfect and differed very little from their parents. As always with a brood of birds that one has succeeded in rearing, the family made a pretty picture. The whole family, both parents and youngsters, slept in a clump under



a piece of wood near the roof. The young birds commenced feeding themselves soon after leaving the nest, and seemed particularly fond of timothy grass thrown on the ground. I have yet to find a seed-eating bird that does not relish this food.

Feeding the birds while the young were in the nest was fairly straightforward. The birds' staple food of a mixture of groats, canary seed, hemp, sunflower, and millet was given with the addition of soaked seed and spinach stalk. The birds were really as easy to rear as Budgerigars. Green food was a bit of a problem at first. The only kind that the cock bird would look at at the beginning was seeding forget-me-not. Later he ate spinach.

The hen Parrotlet started sitting again about a week after the young left the nest, and reared another nest of young ones—two pairs this time. I was very pleased at my success with these birds, as it seems to be some years since they were bred, but as appears to be the case with many parrot-like birds, once the pair decides to nest they usually make a good job of it. The main difficulty seems to be to get a true pair of birds in the right condition and frame of mind.

Hawfinches proved a disappointment again this year. They nested but the hen died with laying her first egg.

Shamas also nested without result. The hen had bad egg-binding every time she laid, and never managed to lay her eggs in the box. The cock sang beautifully all the summer and would very willingly have murdered any bird he could have reached. During the previous winter the hen Shama had been given a large flight and a heated shelter, but I am inclined to think that the trouble with egg-binding may have been caused through her having become cold at times in the winter. It must, however, be said that she showed no signs of distress at all, but was always in the best of health and spirits.

An attempt was made to breed three species of Cardinals—Green, Scarlet, and Yellow-billed, but none advanced further than nest building. The little Pygmy Cardinal or Black-crested Finch which I bred in 1951 would, I think, have bred again, but I only had a hen bird. She nested and laid, but of course the eggs were clear.

Green Avadavats reared two good youngsters.

A cock Cordon-bleu paired with a hen Blue-breasted Waxbill and reared four fine youngsters, three in the first nest and one in the second. After their moult one of the cocks showed a faint touch of red on the ear, but the birds undoubtedly favour the Blue-breast. It is generally believed that a young bird obtains most of his colouring from the cock bird, but in these youngsters the Blue-breast is undoubtedly the dominant bird for colour. Can this mean that the Blue-breast is the parent stock and the Cordon-bleu a later variation?

These young birds were reared mainly on seed, but the parents



also ate considerable numbers of mealworms and black fly. The nests were built in a branch of gorse and were simply a small bag of finely woven grass. The nest was practically unlined, and appeared to be built by the cock. He also took his turn at incubation and feeding the youngsters, and was in fact a model parent.

Black-cheeked Waxbills also nested, and one bird sat very closely although no eggs were laid. The nest was very similar to the Cordon Bleu, and it seemed a pity that they did not rear youngsters as they are such attractive birds. This particular pair have now been wintered three times and it is hoped that in 1953 they will breed.

Live food seems to be essential for Black-cheeks, and soaked seed is also relished, but one of the greatest treats that can be given to any seed-eater in the winter is a seed box planted with annual grass and chickweed and brought into the warm until it has grown up fresh and green. All seed-eaters like this, and it cannot be otherwise than highly beneficial to them. This particular pair of birds was exhibited at the 1952 National Show, and I was very perturbed to see that the hen looked very sick after the three days' show. The birds were immediately released into the indoor aviary after their return, and both flew at once to a pot containing cut up dates, which they ate greedily. I am a great believer in dates for softbills and fruit-eaters generally. Cuban Finches and Diamond Sparrows are very fond of them also. It may be that the Black-cheeked Waxbill needs a sweet fruit of this nature to keep it in condition. My experience with these birds has been similar to the general run; very easy to keep in the summer out of doors, but prone to enteritis and sudden death when brought in for the winter.

Nests were built on the ground within a few feet of one another by both Red-eared Waxbills and St. Helena Waxbills. As the nests were on the edge of a tiny bank near the side of the aviary it was reasonably easy to keep them under observation. It is well known that the St. Helena is one of the more easily bred Waxbills, while the number of successful rearings of Red-ears can be counted on one's fingers.

Why this should be I cannot see, as Red-ears have nested and laid with me every year, but they seem to desert before the eggs hatch. I have always considered that this is due to having more than one pair of the birds together. When one considers the hundreds of thousands of these birds that have been imported and kept under all sorts of conditions over the last century this lack of breeding success becomes even more curious. I was therefore very interested in watching the activities of these birds. The nest was the usual rough ball of woven grass with the entrance at ground level and covered with a tiny porch. The cock built his little half open nest on the top, and the whole edifice was covered by a clump of milk thistle. Several of the large leaves of this plant were either hanging down over the nest or lying on the



ground. It was pretty to watch them go to roost at night. The hen had a special route that she always followed. This track started about two feet from the nest and led through the stems of the milk thistle, reaching the ground about a foot from the nest. She then crawled and wriggled her way under the leaves lying on the ground until she could slip into her nest. The cock did not bother so much about concealment, but flew down to his nest. I was both interested and surprised to see that the cock and hen did not sleep together in the proper nest, the cock keeping to his upstairs bedroom.

The nest of Red-ears went the usual way, but with the St. Helenas things were more satisfactory. Their nest was a few feet from the other one, but appeared to be the same except for the cock's nest on top. As usual with Waxbills, I had no certain knowledge that there were any young, until after about six weeks from first sitting a fine youngster flew. He was a cock with ear patches and a rosy tint on the abdomen. He was a fine large bird. Greatly to my surprise two other youngsters flew at the same time and apparently from the same brood. They were small brown birds with no trace of any red about them. The parent St. Helenas fed all three birds, so presumably they flew together. It was the wide difference in the birds that surprised me—one bird a true St. Helena in full colour, and these two much smaller birds with no red at all. No colours appeared at all until the moult, and then the birds, after appearing to be Red-ears, turned into a sort of cross between a Red-ear and a St. Helena. I still have these birds and shall try and breed with them this year. At the beginning I thought that the Red-ears had laid in the other nest, were in fact partly parasitic. This would account in part for the small number of successful breedings of this species, but I now think that the youngsters were hybrids. I had proof last year that this can happen when from one nest of Linnets I reared two Linnets and two Redpoll-Linnet hybrids. This time I think I have one true St. Helena and two hybrids. Perhaps someone who has bred St. Helenas before may be persuaded to give details of immature plumage. It may be that hen birds do not assume adult colour until the moult, while the cock birds fly from the nest with full colours. I find this hard to believe, but would be pleased to hear more about it.

Black-chinned Yuhinas provided another near miss. I had had these birds for two years and had never considered them a true pair. No sign of any display was ever seen, although the birds were always together and seemed very fond of one another. Even a separation of a few feet was sufficient to make them call constantly. They commenced nesting in early May, and constructed a half-roofed nest in a wire cylinder. Four eggs were laid of a dull brownish-green colour with darker markings. The nest was built with strands of opened string and lined with wool. The birds certainly behaved like a true



pair, and relieved one another regularly at the nest. Also I believe that one bird slept in the shelter. After about a week both birds were seen to be sitting together, and I became convinced that they were both hens. After a time I took the old nest away and both birds built separate nests, but no more eggs were laid. It was a pity that they did not breed, as I understand that they have never been bred in England so far.

Ruficauda Finches started the season badly, but finished a little better. In the spring I had two of these birds that I thought were a true pair, but the "cock" turned out to be a hen, and the two birds then built a joint nest, laid ten eggs between them, and spent some months happily brooding clear eggs. About the beginning of August I learned that Mr. Vane had some spare cock birds, of which I procured two and turned them into the large aviary with the hens, first taking away their old nest. Although the cock birds seemed interested enough in the hens, the two old ladies, doubtless considering that they got along very comfortably without the complications arising from marriage, decided to stick together and built another nest in which they laid seven eggs which they commenced to brood. A cock bird approaching the nest was a signal that brought an amazon forth to drive him away. The male birds looked rather foolish having to sing and display at a safe distance.

I myself took a rather dim view of this ultra-militant feminism, as I naturally thought that all the eggs would be clear, but the birds did not take the matter to extremes, and in due course all seven eggs hatched. Even when the young were in the nest the cock birds were never allowed near them or to feed them. Owing to the very wet weather only two young birds were reared. It may perhaps be as well to mention that I have proved that both of the hens are in fact true hens. Both have been egg-bound!

In conclusion I would like to put on record a very unusual occurrence; in fact it comes nearer to thought as we understand it than anything else that I have observed myself. The interpretation of the facts will probably differ, but the truth and accuracy of them are absolutely guaranteed.

Many of our members have bred Cuban Finches, indeed these pretty little birds are nearly as easy to breed as Zebra Finches as long as they have an aviary with no other birds of their species with them. The cocks fight furiously among themselves, sometimes to the death, but with other birds they are peaceful and friendly.

As their name implies, they come from a very warm climate; indeed so little do they bother about the weather that their nest, a small bottle affair usually fixed to the outside of a gorse branch, and not built in its shelter, is so thin that the sky can be seen through the roof and the sitting birds and eggs through the base. As another instance



of their being accustomed to extreme heat, they do not brood the eggs in the same way that a normal bird does, but only return to the nest for about five minutes in the hour. Indeed the only way that one can be sure of eggs, apart from an examination, is to notice that the adult Cubans keep a very close watch on the nest, any other bird going near being immediately driven off.

My pair of Cubans consisted of a cock bird that I had bred the year before and a newly imported hen. No attempt was made to nest until well into August, and it was not until the 31st that I heard the youngsters being fed.

As some of my readers may remember, the week-end of the 6th–7th September was accompanied by a very heavy frost. On the morning of Saturday the 6th I went to the aviary expecting to find the parent birds had deserted the nest and the youngsters dead. This is the usual happening with all birds, both British and foreign, when struck by an unexpected frost. To my surprise when I approached the aviary I found both of the parent Cubans frantically pulling wool out of old nests and carrying it back to their own. This was then taken inside, roughly placed in position by the beak, and the bird then stood under it and placing its shoulders under the wool it stood up on its toes and forced it into position with its back. All Saturday the birds worked furiously, and all Sunday as well. The young were fed at odd times and screamed constantly for food, but the parents paid little attention to them, but carried on with their work. By Sunday evening the nest, which on Friday had been the size of a man's fist, was as large as a football. A great mass of loosely held together wool with the sides about three inches thick. On Monday night it rained and the nest was washed half away from the branch. On Tuesday and Wednesday the young flew, and more rain on Thursday brought the whole nest to the ground. Two out of the three young were reared, and I still have them.

This incident raises several interesting queries. How did these tiny birds, with no possible race memory of frost, know how to react correctly to the danger? Perhaps some of our members have had similar experiences or have noticed the behaviour of these birds in the West Indies. Being in the wool trade I prefer to think that even Cubans can read advertisements, and that they believe "that there is no substitute . . ."

\* \* \*



## HYBRID SONNERAT'S JUNGLE FOWL

By DAVID M. JOHNSON (Washington, D.C., U.S.A.)

The article contributed by me about a year ago to the Magazine appears to have aroused great interest, and I have received many letters of inquiry. It gives me great pleasure to share with my fellow members of the Society the results of my further research into this most interesting subject. I have even had a Kodacolour print made of a painting I have done of some of these hybrids.

It would seem that this question of Sonnerat hybrids has not hitherto received the attention it deserves. I have seen a list of at least seven books in which reference has been made to the contribution made by Sonnerat's Jungle Fowl to any breed of domestic poultry and all deny any such contribution or any relationship. One of these books goes so far as to say: "The resemblance between this Grey Jungle Fowl and the domestic is great, and it was believed that this would prove to be the ancestor of the domestic fowl. This is not the case, however; the two species do not cross, or if they did interbreed, the hybrids of this cross are sterile." I may say that it is not my opinion that the Grey Jungle Fowl resembles the domestic fowl in appearance, and my own researches show that hybrids are not always sterile.

There is another reference in an old British book. Dr. Danforth, of Stanford University, who has done extensive pheasant research in genetics and intergeneric as well as interspecies crosses in pheasants, has kindly sent me his papers and a reference in an old British book to a Grey Jungle Fowl running free with bantams in England, crossing with them, but the offspring were finally absorbed in the bantams. This was in the year 1870.

It seems strange that Man has treated so lightly, even indifferently, a subject which is so related to Game Birds and also to poultry, in its many phases of interest and study.

The records of our Society seem brief and incomplete in this particular subject, and I am happy to be able to contribute my findings. By autumn I hope to report my findings in my research on three-quarter Sonnerat's cockerels and Cornish Indian Game Bantams.

I have referred to a picture I painted of Sonnerat's hybrids, and if it is not possible to publish it in the Magazine perhaps it could be retained in the records of the Society, so that any member who wished to see it could do so. At the time I painted this picture the cockerels were under a year old and the feet and legs were then yellow. But at a year old the feet and legs turned red, as in their sire, the cock *sonneratii*, and while the cock bird superficially resembles the Red Jungle Fowl (*Gallus gallus*), the chest would indicate *sonneratii*, as well as the underglow. The shape of the feathers, too, resembles *sonneratii*, but the comb



takes after the mother's side, the *Gallus gallus*. The hen hybrids are, however, so like the Grey Jungle Fowl hens that it would take an expert to distinguish them. In their voices and calls the hybrids more resemble *sonneratii*, which differs from *Gallus gallus* in this respect. The hybrids do not seem to prefer domestication as do the Red Jungle Fowl.

I will now comment briefly on the three-quarter *Sonneratii* hybrids, with which I propose to deal more thoroughly at a later date.

These birds were the produce of five-month-old cockerel *sonneratii* hybrids and an old hen *sonneratii*. They were hatched in September and the clutch were 100 per cent fertile. They grew up in adverse weather conditions and during a winter of almost continuous rain and frost. Their hardihood was astounding. One three-quarter hybrid pullet refused to be weaned but is nevertheless this year assisting its mother in incubating. She looks exactly like a *sonneratii*. The two brothers, three-quarter *sonneratii*, resemble a Grey Jungle cock in appearance, especially one of them which has almost no comb. I have provided these with a Cornish Game Bantam as mate and they are compatible. I have chosen the Cornish Bantam for two reasons. One reason is they have no superfluous comb and wattles and the other reason is that some experts believe that the Indian Game Fowl itself is something other than *Gallus gallus*, which prompts me to research along these lines. I have found the three-quarter *sonneratii* hybrid to be inherently wild. They seem to think of nothing but eventual escape, even more than the pure wild Grey Jungle Fowl, which will settle down somewhat. These hybrids are highly prolific, producing an abundance of eggs, as in poultry, and the maternal instinct is strong. Egg-laying is not strictly seasonal, as in *sonneratii*, and the cock bird is in season at all times. This is not so in the *sonneratii* cock, at least, as its breeding season is strictly in spring and again in autumn. Its reproductive qualities go into eclipse with the summer moult.

I have been impressed with the apparent potentialities of the hybrids, in their varying degrees, as offering possibilities as a game bird if a suitable habitat can be worked out. This, of course, should be done by a system of trial and error by the younger generation of aviculturists. There seems much promise here for the covert. The food of *sonneratii* and its hybrids should be easily found. It seems to consist more of living creatures, such as insects and worms, and its demands on a grain diet are less than the other species of *Gallus*. Its alertness, virility, and intelligence seem remarkable.

It is to be hoped that others will carry on this work, so that this bird of unlimited energy and virility may be established in parks, estates, and preserves.

\* \* \*



## HOODED COCK AND MANY-COLOUR HEN HYBRIDS

By PROFESSOR E. SPRAWSON (Kenley, Surrey, England)

I was very much interested in the final paragraph of "News and Views" on page 70 of the March-April issue of the AVICULTURAL MAGAZINE, concerning the breeding of hybrids from Hooded cock and Many-colour hen Parrakeets, and their great likeness to the Paradise Parrakeet.

Though neither a prophet nor the son of a prophet, I have for many years thought that this would be so, and there were several reasons which led me to think so, as follows :—

The areas occupied by the Hooded and Many-colour (illustrated in Neville Cayley's *Australian Parrots*) might well, on occasion, overlap on the western border of Queensland ; and that occupied by the Paradise Parrakeet actually does overlap that of the Many-colour in Southern Queensland, so that opportunity for the occurrence of natural hybridization may be said to be present. (It also seems well within the range of possibility for the Golden-shouldered to overlap and hybridize with the Many-colour.)

The differing nesting sites do not, I think, count for a great deal. I have had Hooded Parrakeets dig a hole and nest in an ant-hill here in Surrey (Mr. Boosey published the photograph), I have also had them nest in the ordinary parrakeet nest-box, such as was used by Many-colours ; and did not Canon Dutton record that his Paradise Parrakeets attempted to burrow into the wall of a room—presumably to nest ?—though he did not say how high above the floor level they burrowed, but only that had they gone in they would have got into a loft—and yet it is also known as the "Ant-hill" Parrakeet. Cayley also records the wild Paradise as occasionally nesting in holes in trees and stumps.

Colour and colour distribution. It is an old saying concerning hybrids—and with some truth in it—that they are "coloured like father and shaped like mother". Shape hardly comes into account here, as both Hooded and Many-colour are very graceful birds and of not dissimilar shape, though the Hooded is rather slimmer. The Paradise, which I have never seen alive, appears to be slim also in the photograph in Cayley's book.

The Hooded father would give the black cap to the hybrid—but lessened in area (as in the Paradise).

The crimson patch on the wing I would expect in such a hybrid ; the Many-colour hen has a small red wing patch and the wing patches of the young males as they leave the nest are considerably redder than are those of adult males—which looks as if the yellow patches of the adult males were a later evolutionary production ; the red wing-



patch in the hybrid might then well be a reversion to an ancestral colour. The coloured wing-patch in the Paradise, too, is in size between those of the Hooded and Many-colour males.

The Hooded father would also give the turquoise blue to the rump and upper tail coverts, and the brown to the back. The red colour of the patch on the cock Many-colour's nape might well be transferred to the frontal band on the forehead of the hybrid (as in the Paradise) ; besides, the frontal band in the hen Many-colour is often reddish, and that, too, might influence the production of a red frontal band in the hybrid.

To my mind, some other hybrids which were bred some years ago by Mr. Boosey : Red Rump  $\times$  Hooded, and Brown's  $\times$  Red (Eastern) Rosella, and which were of great interest, tended to confirm these views, and I then put forward my view that the Hooded cock  $\times$  Many-colour hen hybrid ought to be almost exactly like the Paradise—hoping that Mr. Boosey would be able to produce it if I could not myself—we both had Hoodeds and Many-colours in those days.

One thing, however, puzzled me extremely : the Brown's  $\times$  Red (Eastern) Rosella hybrid was at first sight a Brown's with a deep blood-red cap instead of a black one—and a very beautiful bird ; now Gould records of Brown's : “ I have one specimen also with the whole of the crown of the head a deep blood-red and others with more or less of this colour,” though he regarded it as unusual, but he does mention the occasional occurrence of a band across the forehead—which Cayley also mentions. I believe no one since has ever seen such a specimen as Gould here records, yet Mr. Boosey produces an exact replica by hybridization, and the distribution areas of Brown's and the Red (Eastern) Rosella are almost at the opposite ends of Australia !

Presumably Gould's bird could not have been a hybrid—or at any rate a recent one, though perhaps a throw-back to one in a very remote past, when their areas of distribution were not so widely separated.

Without going into detail there are, in many groups of Australian parrakeets, considerable variations within the range of normal with regard to colour, quite a number of which are grouped as sub-species. So also with broods of apparently normal birds : I have seen them vary considerably even in the same nest, showing I suppose, that although the parents are apparently of the same type their blood must have been mixed with that of some of their adjacent sub-species. Indeed, the evolution in colour in many Australian parrakeets appears to be in a very fluid state, and such that if one could isolate certain types, new sub-species might almost be produced at will.

If then the Paradise originated as a fertile hybrid, such variation might account for any differences that may be found between the hybrids Sir Edward Hallstrom has produced and the naturally wild species—if, indeed, there are any.



Apart from producing imitations of known species by means of hybridization I have often thought that the hens of the more colourful varieties of Bluebonnet might give wonderful potentialities for the production of new colour schemes with male Hoodeds and Many-colours, but so far I do not think many hybrids have been bred with the Bluebonnet. I am not really fond of hybrids but think we may have a lot to learn from them, particularly if they turn out to be fertile.

I hope Mr. Turner will keep us fully informed as to the progress of these hybrids and if they prove fertile, and may I suggest that Sir Edward Hallstrom try the Golden-shoulder cock  $\times$  Many-colour hen hybrid also, and tell us all about both sets of hybrids from time to time, ultimately perhaps with coloured illustrations. Please do, Sir Edward—they are all such beautiful creations and we should be so grateful to know if another species (?), namely the Paradise, could have been produced by natural hybridization in the past—as well as by artificial hybridization in the present.

\* \* \*

## A DIARY FOR 1952 OF NEW ARRIVALS IN THE BIRD DEPARTMENT OF THE BROOKFIELD ZOO AT BROOKFIELD, ILL.

By KARL PLATH, Curator of Birds, Chicago Zoological Park, U.S.A.

### JANUARY

An immature Florida Gallinule (*Gallinula chloropsis cachinnans*).  
This species is practically identical with the one found abroad.

### FEBRUARY

\*Japanese Robin (*Erithacus akahige*).

Azure-winged Magpie (*Cyanopica cyanus*). These two birds were the gift of our Avicultural Society's member, Alex Isenberg, of Palo Alto, California. The Robin is a beautiful little bird much like the Robin Redbreast, but having the whole head and breast rust colour, with a dark band across the lower breast. The Magpie is a fitting mate to our old male.

Female Cordon-bleu Waxbill (*Uraeginthus bengalus*).

*Births*.—1 Green Shell Parrakeet, 1 Sky-blue Shell Parrakeet (*Melopsittacus undulatus*) and 1 Goldie's Lorikeet (*Psitteuteles goldei*).

### APRIL

Bleeding-heart Pigeons (*Gallicolumba luzonica*) from the Gibson Ranch, St. Helena, Montana.

Young male West African Ostrich (*Struthio camelus spatzi*) from Hagenbeck at Hamburg, Germany.



## MAY

- Mearn's Quails (*Cyrtonyx montezumæ*).  
 \*Benson's Quails (*Callipepla bensoni*).  
 Scaled Quails (*Callipepla squamata*).  
 \*Hybrid Scaled  $\times$  Gambel's Quails (*Callipepla*  $\times$  *Lophortyx*).  
 These are all beautiful birds; the first two being especially showy.  
 Blue Peafowl (*Pavo cristatus*).  
 Black-shouldered Peafowl (*Pavo cristatus* variant).  
 \*Fischer's Lovebirds (*Agapornis fischeri*).  
 Common Troupial (*Icterus icterus*).  
 Palm Warbler (*Dendroica palmarum*).  
 Myrtle Warbler (*Dendroica coronata*).  
 Veery Thrush (*Hylocichla fuscescens*).  
 \*Bonaparte's Gull (*Larus philadelphia*). The first one of this abundant little gull (in Spring and Fall) that I have ever seen in captivity.  
 Humboldt Penguin (*Spheniscus humboldtii*).

## JUNE

- Java Sparrows (*Padda oryzivora*).  
 Bluebirds (*Sialia sialis*).  
 American Goldfinches (*Astragalinus tristis*).  
 Grey Parrot (*Psittacus erithacus*).  
 Sora Rail (*Porzana carolina*).  
 Sparrow Hawks (*Falco sparverius*).  
 \*Long-wattled Umbrellabird (*Cephalopterus penduliger*).  
 \*Black and white Manakins (*Manacus manacus*).  
 \*Blue-capped Manakins (*Pipra velutina*).  
 \*Greater Rufous Motmots (*Uraspatha martii*).  
 \*Red-bellied Trogon (Masked Trogon) (*Trogon personatus*).  
 Scarlet Flycatcher (*Pyrocephalus rubineus*). Within the month of September the male of this gorgeous little bird lost all of its scarlet colour without an obvious moult. Where it had been red it is now pure white with a slight tinge of pink on the crest. The wings and tail are as before, blackish-brown. This is quite different from the experience of Dr. Joachim Steinbacher (Frankfurt-am-Main, Germany). His male assumed a speckled grey dress probably much like that of the female. Our female shows the spotted markings a trifle paler than in his illustration and it still has the pinkish tinge on the lower abdomen. Dr. Steinbacher's article appeared in the May-June, 1952, issue.  
 \*Turquoise Jay (*Cyanolyca turcosa*). A most beautiful blue bird with a black band surrounding the brighter blue throat.  
 Yellow Sparrows (*Auripasser luteus*).  
 Shama Thrush (*Kittacincla macroura*).



- Cordon-bleu Waxbills (*Uraeginthus bengalus*).  
 Nonpareils (*Passerina ciris*). Purchased under the name of Butterfly Finch, but they have since replaced their dull yellow underparts with the normal scarlet.  
 Lavender Finches (*Estrilda caerulescens*).  
 Crowned Cranes (*Balearica pavonina ceciliæ*).  
 Common Sheld-Ducks (*Tadorna tadorna*).  
 \*Bar-headed Goose (*Anser indicus*).  
 \*Sun Bittern (*Eurypyga helias helias*).

### JULY

- Sora Rail (*Porzana carolina*).  
 Purple Gallinule (*Porphyryula martinica*).  
 Piping Guan (*Pipile cumanensis*).  
 \*Taczanowski's Yellow-tailed Oriole (*Icterus mesomelas taczanowski*).  
 \*Chestnut-crowned Redstart (*Myioborus ruficoronatus*).  
 Blue Jay (*Cyanocitta cristata*).  
 Least Bittern (*Ixyobrychus exilis*). The most beautiful of the smaller herons, but seldom seen and not easy to keep in captivity.  
 Snake Birds (*Anhinga anhinga*).  
 \*Schalow's Touraco (*Tauraco livingstonii schalowi*). One of the handsomest.  
 Killdeers.  
 Flicker (Golden-winged Woodpecker) (*Colaptes auratus luteus*).  
 Swainson's Lorikeet (*Trichoglossus hæmatod moluccanus*). This bird escaped from its outdoor flight four years ago. It was brought in by its second owner since then.

### AUGUST

- Blue Jay (*Cyanocitta cristata*).  
 Imm. Yellow-crowned Night Heron (*Nyctannassa violaceus*). Curious because its northern breeding range is but until recently 250 miles south of Chicago. It was taken in the Chicago region. Normally breeds in the southern states.  
 Bar-head Goose (*Anser anser*).  
 Yellow-naped Amazon (*Amazona ochrocephala auropalliata*).  
*Births.*—Goldie's Lorikeets, Spengel's Parrotlets, Queen Alexandra's Parakeets, Crimson-winged Parrakeets, Shell Parrakeets, Crested Pigeons.

### SEPTEMBER

- Female Cardinal (*Richmondia cardinalis*). Captured in the grounds.  
 Wood Ducks (*Aix sponsa*).  
 King Penguins (*Aptenodytes patagonicus*).  
 Hermit Thrush (*Hylocichla guttata faxoni*). Captured in the grounds.  
*Births.*—Hybrid Northern × Pale-headed Rosellas.



OCTOBER

- Virginia Rail (*Rallus limicola*).  
 Wood Duck (*Aix sponsa*).  
 Shell Parrakeet (*Melopsittacus undulatus*). This bird had escaped from someone and took refuge in one of our large outdoor parrot aviaries and lived peaceably with many of the larger species.  
 Albino Robin (*Turdus migratorius* variant). Snowy white all over.  
 \*Meadow Lark (*Sturnella magna*).  
 Shell Parrakeets of various colours from Delacour's collection in Clères.  
 Reddish Egrets (*Dichromanassa rufescens*).  
 American Egret (*Casmerodius albus egretta*).  
 White Ibis (*Guara alba*).  
 \*African Golden Orioles (*Oriolus oriolus*).  
 \*Yellow Rail (*Coturnicops novæ boracensis*). A seldom seen species caught on the University campus near Baton Rouge, Louisiana, while the writer was on the A.O.U. Convention there.  
 Secretary Birds (*Sagittarius serpentarius*).  
 Births.—Nyasa Lovebirds (*Agapornis lilianæ*).

NOVEMBER

- \*Pair of Grand Eclectus (*Lorius roratus*).  
 \*Pair of Alexandrine Parrakeets (*Psittacula eupatria magnirostris*).  
 \*Pair of Plum-headed Parrakeets (*Psittacula cyanocephala*). An exchange with our Avicultural member F. H. Rudkin, Fillmore, California.  
 Orange-headed Ground Thrushes (*Geocichla citrina*).  
 Brown-backed Solitaires (*Myadestes obscurus*). A gift from our Avicultural member Ray Thomas, Beverly Hills, Calif.  
 Cockatiel.

DECEMBER

- \*Lesser Hill Mynah.  
 \*Greater Scaup Duck.  
 Births.—Goldie's Lorikeets, Zebra Finches.

\* New to the collection.

\* \* \*



## LONDON ZOO NOTES

By J. J. YEALLAND

The whole of one side of the Tropical House has been furnished with tropical plants, including orchids, and is now devoted to Humming-birds of which twenty-two specimens of six forms arrived some five weeks ago.

The Golden-throated (*Polytmus guainumbi thaumantias*) and the Red-throated Sapphire (*Hylocharis sapphirina*) are new to the collection; the remainder consist of Waterton's Wood Nymph (*Thalurania watertoni*); Pucheran's Emerald (*Chlorostilbon aureoventris pucherani*); Blue-breasted Sapphire (*Chlorestes notatus*), and another not yet identified which might be immature *Amazilia leucogaster*.

These birds are being fed on the liquid diet recommended by M. Cordier and plenty of fruit flies. The fateful forty days of which M. Cordier writes have almost passed and there have been no losses so far. This happy state could be attributed as much to the perfect condition of the birds on arrival—due to some excellent packing and to air travel—and to the amount of exercise they are able to take in this large flight as to the food they have received here.

Two Sunbirds new to the collection have been received from Messrs. Seago and Bloom; they are the Nandi Double-collared (*Cinnyris reichenowi*) and the Uganda Olive-bellied (*C. chloropygius orphogaster*); also four of the Sudan Beautiful Sunbird (*Nectarinia pulchella lucidipectus*) and a single Uganda Green White-eye (*Zosterops virens stuhlmanni*).

An Active Parrot (*Amazona agilis*) and a Red-throated (*A. collaria*) were brought from Jamaica and presented by Lieut.-Col. Legard. It appears that these two Parrots are not uncommon in certain parts of the island.

Other presentations include an African Sea-Eagle (*Cuncuma vocifer*); three Silver Pheasants; a Tropical Seed Finch; a Guttural Finch; a Nepal Hill Myna; a Festive Parrot; a Pennant's, a Black-tailed, and a Quaker Parrakeet.

A number of the Owls have laid, but unfortunately many of them are without mates and only the Great Eagle-Owls have young ones. The other Eagle-Owls that have laid are the Turkestan, the Fraser's, the Cape, and the Abyssinian Spotted. Both the Spectacled have eggs, and the Ceylon Fish Owls have laid a second clutch.

Greenland White-fronted, Upland Geese, Egyptian, Canada and Grey Lag have eggs; also New Zealand (second clutch) and Common Sheld-Duck, as well as the usual Carolina and Red-crested Pochard. The Choughs are sitting on six eggs and Pheasants, including Temminck's and Swinhoe's, have laid, as have Magellan Penguins and a Gannet. A further three Black-footed Penguins have been bred.



The King Penguin hatched last August has almost completed its moult and a tuft of down on its head is all that remains of the baby plumage.

\* \* \*

## BRITISH AVICULTURISTS' CLUB

The thirty-eighth meeting of the Club was held at the Rembrandt Hotel, Thurloe Place, South Kensington, S.W. 7, on Wednesday, 13th May, 1953, following a dinner at 7 p.m.

Chairman : D. Seth-Smith.

Members of the Club : Mrs. J. R. Alderson, Miss K. Bonner, Mrs. V. M. Bourne, G. T. Clark, Mrs. G. T. Clark, T. Crewes, P. L. Dabner, A. H. D'Aeth, W. T. Dring, Mrs. W. T. Dring, B. H. Dulanty, O. E. Dunmore, J. F. M. Floyd, Miss S. A. Fothergill, J. C. Garratt, Miss D. Gask, H. J. Harman, Miss E. M. Knobel (Club Hostess), Miss M. H. Knobel-Harman, Dr. F. B. Lake, P. H. Maxwell, S. Murray, K. A. Norris, A. A. Prestwich, R. C. J. Sawyer, E. N. T. Vane, C. H. Wastell, H. Wilmot.

Guests : Dr. K. W. Aylwin-Gibson, J. Bailey, Miss D. Dabner, Mrs. J. C. Garratt, Miss H. Gentry, Mrs. F. B. Lake, Mrs. S. Murray, Miss C. D. Nunn, Mrs. D. Seth-Smith, Miss K. Tousey, Miss M. White, Mrs. C. H. Wastell, Mrs. H. Wilmot.

Members of the Club, 29 ; guests, 13 ; total, 42.

Miss Katharine Tousey, of the Massachusetts Audubon Society, showed the film *Audubon's America*. While, perhaps primarily intended for showing to ornithologists, it nevertheless contained much of very considerable interest to aviculturists generally. The film, the joint effort of a dozen or so photographers, gives a very good idea of the country through which Audubon made his journeys, pioneer from the ornithological point, and shows many of the birds he depicted in his monumental *The Birds of America*.

Miss Tousey not only gave a running commentary, but showed her versatility by imitating the call of many of the birds shown. Members are indebted to Miss Tousey for the opportunity of seeing a very informative film.

ARTHUR A. PRESTWICH,

*Hon. Secretary.*

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## DIAMOND JUBILEE OF THE AVICULTURAL SOCIETY 1894-1954

The year 1954 marks the Diamond Jubilee of the Avicultural Society. The Society's Golden Jubilee in 1944 could not, unfortunately, be celebrated owing to the war; the occasion was, however, marked by a special Jubilee Supplement of the AVICULTURAL MAGAZINE.

The President and Council feel that the forthcoming Jubilee should be commemorated in a manner worthy of the Society. It has, therefore, been decided to hold an Avicultural Congress in London, 16th-19th June, 1954.

Invitations to attend are being sent to prominent aviculturists throughout the world.

During the four days of the Congress there will be visits to the principal collections, papers will be read, and lunches and dinners arranged.

This preliminary notice is being given at such an early date in the hope that as many members as possible will arrange to be present and give their support to an event certain to add greatly to the Society's prestige.

ARTHUR A. PRESTWICH,  
*Hon. Secretary.*

\* \* \*

## NEWS AND VIEWS

Preliminary reports indicate that this will prove to be a bad season for breeders, of parakeets at least. The most interesting birth so far is of a young Moustache Parakeet, now five weeks old, in the aviaries of E. N. T. Vane.

\* \* \*

The American Pheasant Society has bestowed its greatest distinction, the title of Master Breeder, on John Willis Steinbeck, of Concord, California, "for outstanding accomplishment in the field of pheasant propagation."

Dr. D. S. Newill, Connellsville, Pennsylvania, whose work was also outstanding, received Honourable Mention.

\* \* \*

The "Parrots and Miscellaneous Birds (Prohibition of Importation) (Amendment) Order, 1953" authorizes the relaxation of the ban on the importation of birds of the Parrot family into Great Britain from Jersey, the Isle of Man, and Northern Ireland. The ban was



relaxed as from 8th May because the three authorities concerned have now imposed similar restrictions on the importation of Parrots from abroad to those at present in force in Great Britain.

\* \* \*

C. af Enehjelm, Helsingfors, reports : " This year I have bred two Peach-faced Lovebirds, one in each of two nests, indoors. Cherry Finches have had two, four, and now three young. Two other pairs have not yet made any attempt. Cuban Finches, a nest of two, and another pair two young still in the nest. Golden Song Sparrows have two young. Two pairs of Bichenows and one pair of Red-headed Parrot Finches are sitting. One pair of *Forpus passerinus* has six young in the nest, and another pair has two. Black-crested Finches (*Lophospingus pusillus*) are sitting on two eggs. I bred this species in 1951 in an outdoor aviary, using the same hen, so I hope to be successful again."

\* \* \*

The smuggling of birds into the United States appears to be greatly on the increase.

A U.S. attorney has expressed the belief that bird smugglers are now doing a larger business than narcotics smugglers. A member of the federal legal staff has said that virtually all the " quality " parrots and parrakeets are smuggled into the U.S. through Mexico.

The arrest has recently been announced of three persons said to be members of an international smuggling ring, " in a million dollar operation handling 70,000 birds annually." The three were released on \$5,000 bail each at their appearance before the U.S. Commissioner on charges of conspiring to smuggle tropical birds.

The authorities are determined to prevent illegal importations. Considerable prominence is given in the Press to prosecutions and a few recent captions are : " Customs Agents seize 1,100 Birds " from two smugglers ; " Smuggler sentenced to 6 months for smuggling 304 birds from Mexico " ; " Parrot-smuggler draws \$500.00 fine on charges of smuggling more than 600 parrots into the United States."

There is a total commercial ban on psittacines, and legally only not-for-sale pets are allowed to be imported. Persons who have been outside the U.S. for more than four months are allowed to take in two such birds each year, provided they have been in their possession the whole of that time.

\* \* \*

#### WATERFOWL RINGING SCHEME—DETAILS OF RECOVERIES :—

Date ringed.	Species.	Ringed by.	Date recovered.	Place where recovered.
23.8.1951	Grey Lag Goose	Lt.-Col. H. C. Cator, Norwich.	3.3.1953	Wroxham, Norfolk. Killed by lorry.



An Amherst Pheasant cock, wrongly carrying one of the Society's waterfowl rings, escaped from near Preston at the end of October, 1952. Six months later the Wigan police reported its arrival at a local farm, from where it has now been recovered by its owner.

A. A. P.

\* \* \*

## REVIEWS

OISEAUX DE CAGE. By M. LEGENDRE, with illustrations by L. DELAPCHIER. Éditions N. Boubée & Cie, Paris, 1952. Price 1,200 francs.

Since the second edition of *Les Oiseaux* by J. Delacour and M. Legendre, which was published in 1934 and quickly sold out, no book on aviculture has been published in France. The manual under review is therefore long overdue and will be greatly welcomed, particularly by French-speaking aviculturists. As the author states in his preface, in order that the book may be included in the special series published by Messrs. N. Boubée, and space is limited, only the Passeriformes and some families belonging to nearly related orders are dealt with. Parrots and Doves are not included and the author states that he hopes to deal with them in a later volume. The collection, which forms a very diverse group from the avicultural point of view, contains the species most popular as cage or aviary birds and those which are of particular interest to aviculturists rather than those which are rarely imported.

The book is divided into sections, the first containing general remarks on keeping birds in captivity, and this is followed by chapters on cages, food, rearing of young birds taken from the nest, mutations, and illnesses and diseases. After this various species are dealt with individually, a short description of plumage, etc., being given, with notes on the birds' adaptability to captivity. The book concludes with a summary of the most important points which must be regarded when keeping birds in captivity, a full bibliography and an index to all species under both the popular and scientific names.

The book is profusely illustrated with 12 colour plates, depicting 79 species, 53 black and white drawings, and 7 tail pieces by L. Delapchier. In addition there are 12 half-tone plates which include some very interesting photographs of cages varying from the "cages de luxe" of Japan to a cage for a blinded Chaffinch.

Monsieur Legendre has a vast and detailed experience in keeping birds and the book is full of most valuable information. A foreword is contributed by Professor J. Berlioz.

P. B-S.



FOREIGN BIRDS FOR BEGINNERS. By D. H. S. RISDON, F.Z.S.  
*Cage Birds*. London, 1953. Price 10s. 6d. net.

Whilst the title to this book is most apt it is inclined to give the impression that this is a re-hash of a very old work, which it most certainly is not. It may be fairly stated, without fear of contradiction, that no treatise on this subject has previously dealt with the matter so concisely, clearly, and in such an interesting manner.

Every reader should peruse the preface carefully, it contains some very useful axioms. Many experienced bird-keepers may well differ with some of Mr. Risdon's remarks, but if they apply common sense and allow for individuality in birds, as suggested in his preface, they will find no cause for real disagreement. It is a book for all bird-keepers and should be in every aviculturist's collection.

The coloured plates are most helpful to identification, if not of great artistic worth, but they fulfil their immediate purpose admirably. It is unfortunate that the wrapper portrays non-existent gems of aviculture, as this may well result in more knowledgeable bird-keepers jumping to the conclusion that it is written by someone not well acquainted with the subject. To those people therefore may I say : "Don't be put off."

E. N. T. V.

\* \* \*

## NOTES

### *Parrots in Captivity*

Listed in the Bibliography of *Records of Parrots Bred in Captivity* is the classic work, "Greene, Dr. W. T., *Parrots in Captivity*, 4 vols. (1884-88)."

A correspondent queries the correctness of the number of volumes. It may, therefore, be of interest to those in possession of this work if the position is clarified.

*Parrots in Captivity* appeared first in parts, of which parts 1 to 18 formed volumes i and ii. Volume iii consisted of parts 19 to 27, and half of part 28. The remainder of part 28, with parts 29 and 30 formed an unfinished volume iv, now extremely scarce. Messrs. Wheldon and Wesley, Ltd., recently had a set in parts pass through their hands, and I am indebted to them for this information. Volume iv consists of 36 pages with chapters and coloured plates of birds described as the Ceram or Chattering Lory, Red Lory, Reticulated or Blue-streaked Lory, Scaly-breasted Lorikeet, Malaccan or Long-tailed Parrakeet, and Malabar Parrakeet; together with plates of Stanley's Parrakeet, African or Rose-ringed Parrakeet, and Horned Parrakeet.

There is a four volume set in the Library of the Zoological Society of London.

A. A. P.

### BREEDING OF ROCK BUNTING (*Fringillaria tahapisi tahapisi*) IN SOUTH AFRICA.

A querist correspondent of mine, Mr. R. G. Atkin, of Plumstead, Cape Province, South Africa, informs me that he has bred *Fringillaria tahapisi tahapisi* the Rock Bunting or Klip-mossie. They nested in a hanging basket containing hay, suspended about three feet from the ground. Three bluish eggs heavily marked with reddish-brown were deposited. Eggs were laid 22nd February, 1953, young hatched 7th and 8th March, 1953. Eyes were open 15th March, 1953, and the three young left the nest on 20th and 31st March. Although strong on the wing they kept much to the ground. Further young were hatched 8th April, 1953. In addition to their seed, bread and milk, mealworms, and termites available in quantity were supplied, and also seeding grasses. There seems to be no previous record of breeding of this particular species.

ALLEN SILVER.



## CORRESPONDENCE

## BREEDING OF GREY PARROTS IN INDIA

It must be a great many years ago now that I was told about the Grey Parrots in India, and I am very interested to hear that it was Sir Godfrey Davis who told me.

All I remembered—and I must confess that as I get older my memory gets worse and worse!—was that a gentleman who had spent some years in India came to visit our farm, and said that he had *been told* of someone in India who had such a prolific pair of Greys that he, as it were, hardly knew what to do with the young ones.

As I knew from experience how difficult it is even to mate a pair of Greys successfully, let alone to breed from them, I was naturally sceptical—the more so because, in my experience, Greys go in for very small clutches of two or three eggs and the young spend a very long time indeed in the nest, so one would be most unlikely ever to have a glut of them.

I am not sure to which article of mine Sir Godfrey refers, but if, in it, I gave the impression that I thought the story was simply an invention on *his* part, I must have expressed myself very badly, and hasten to apologize for—as the newspapers say—any inconvenience it may have caused him!

Incidentally, I should not have said that being a bad judge of character was among my many failings, and if I have become a particularly “disbelieving fellow”, it may well be because my credulity has been sometimes strained to breaking point by—to give but one example—some visitor or other to our farm who solemnly assured me that they had heard of someone who had high hopes of breeding red Canaries, as they had recently bred a brood of Firefinch × Canary hybrids! Naturally I assumed that I was intended to treat this as a great joke, until I realized that my informant took it quite seriously!

EDWARD BOOSEY.

BRAMBLETYE,  
KESTON, KENT.

## THE PROBLEM OF THIRD BROODS OF PARRAKEETS

My objection to the Duke of Bedford's two suggested methods of preventing a hen Turquoise from having three nests is that both tend to risk the second brood, in order to make sure that there shall not be a third. There is, for instance, always the chance that a hen, suddenly left to finish off the rearing of her brood single-handed, may tire of her task and either give them insufficient food or stop feeding them altogether.

The Duke's second method entails doing the very thing I always avoid if I possibly can—namely taking away the young ones before they are fully independent of their parents. Occasionally, if the parents start moulting and neglect them, one is forced to do this, and the young have to learn to feed themselves as best they can, but I would never do it unless I was left with no alternative. Then, too, they have first to be caught up, and to do this the Duke recommends that one “should go in and net the whole brood as quickly as you can before they have time to do themselves serious damage” to which—knowing how wildly young Turquoisines batter about if one so much as approaches their aviary—I can only say, with the late Dr. Joad, it all depends what you mean by serious damage!

The Duke asks if I can say how many hens I have lost before they put up the old hen's satisfactory record, and if he means, as presumably he does, how many have I lost through letting them over-breed—the answer is quite definitely none; if only because all the other hen Turquoisines I have kept were apparently staunch believers in a particularly rigid form of birth-control!

I cannot say how many of the young of the third broods have matured into good breeding stock, because those we kept for breeding purposes were among the first young ones the old pair ever reared here, but I can truthfully say that, not in one single instance was there any sign whatever of weakness or degeneracy among the third broods.

EDWARD BOOSEY.

BRAMBLETYE,  
KESTON, KENT.



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## NEW MEMBERS

The twenty-four Candidates for Election, proposed in the March-April, 1953,  
number of the AVICULTURAL MAGAZINE, were duly elected members of the Society.

## READMITTED

- P. H. HASTINGS, 182 Sultan Road, Landport, Portsmouth.  
Dr. H. WILDEBOER, "Burnbrae," Holderness Road, Hull, Yorks.

## CHANGE OF STYLE

Lt.-Colonel C. C. GEERTSEMA.

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J. RODGERS, to Balland House Cottage, Ashburton, Devon.  
J. W. C. SUTTON, to Salthouse, Holt, Norfolk.

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### WANTED

First Annual Report (1947-1948) Severn Wildfowl Trust.—Lt.-Colonel C. C. GEERTSEMA, Boschwyk, Soestdyk, Holland.

Breeding pairs of Rosellas, Barrabands, and Red-rumps.—J. F. INGLIS, Montgarrie Road, Alford, Aberdeenshire.

## AUSTRALIAN PARROTS IN CAPTIVITY

*A series of articles by Alan Lendon published in the Avicultural Magazine. A full account of 60 species of Australian Parrots is included in the book which deals where possible with the author's personal experiences in keeping them in captivity in South Australia.*

*There are one coloured and seven photographic plates. Stiff paper cover. Price 7s. 10d., post free. Published by the Avicultural Society, and obtainable from the Hon. Secretary, 61 Chase Road, Oakwood, London, N. 14.*



# AVICULTURAL MAGAZINE



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# THE AVICULTURAL SOCIETY

Founded 1894

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**The Editor : Miss Phyllis Barclay-Smith, 51 Warwick Avenue, London,  
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AVIARY SEEN THROUGH SITTING ROOM WINDOW.

[J. Delacour



# AVICULTURAL MAGAZINE

THE JOURNAL OF THE AVICULTURAL SOCIETY  
AND THE AVICULTURAL SOCIETY OF AMERICA

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JULY-AUGUST, 1953

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## MY CALIFORNIA AVIARIES

By J. DELACOUR (Los Angeles, California, U.S.A.)

After nearly twelve years of life in New York City, on the 16th floor of a Fifth Avenue building, I have moved to California as Director of the Department of History, Science and Art of the County of Los Angeles. A main change in my life has resulted from the mildness of the climate and the consequent possibility of keeping outdoors, with little trouble, a number of semi-tropical, or tropical, plants and birds. Last summer I bought a small house in one of the many charming residential sections of this unusual city, which is really a collection of suburban towns. Its tree-lined avenues and gardens make it country-like and attractive. The rare advantage of my new house is that the garden at the back (the back-yard, as it is called in America) is crossed by a small natural stream, running all the year round at the same speed, notwithstanding the six months of dry weather which Southern California enjoys (more or less !) between May and October. Such permanent streams are as rare here as they are on the Riviera.

The garden, 300 feet deep, is cut by a deep ravine which has been skilfully laid out as a rock garden, with a long Japanese bridge crossing it. Near the house I have made a pond for lotus and blue water-lilies, and the sunny far end of the garden has been reserved for cacti and succulents. The rest is nicely shaded by trees, full of camellias and azaleas. I have added many species of forest palms, ferns, aroids, bromeliads, orchids, and other interesting plants. It looks like a large conservatory.

I had, of course, to keep birds. Possibilities, however, were limited. I did not want to spoil the garden, and in town, noisy things, which might bother neighbours, are not allowed. At the north side of the garden, by the house, is a garage which I promptly turned into a bird house. Nearby, a large window of the sitting-room looked on to a narrow (10 feet) passage of drab bricks. This was transformed into



an aviary, partly covered with transparent plastic, partly with a half-inch wire netting roof. It is 12 feet high, 24 feet long, and including the slice of the garage used as a shelter, 20 feet wide. Properly laid out and planted it looks really charming, and birds do well in it. Along the fence, on the north side, there is a full partition up to 6 feet, and a shelter is provided at the top by a vertical 18 inch wide strip of plastic with another one of the same width on the roof of the aviary. No heating is necessary, as frost does not occur there. This first aviary has a population of finches, one or two pairs each of most of the Australian species; Lavenders, Ruddies, and Cordon-bleus; Avadavats; Auroras; Rainbow Buntings; Red Hooded Siskins; Pintail Nonpareils, etc., about sixty altogether. There are also pairs of Painted Quails, Mountain Witch, Bartlett's, Silver Diamond, Talpacoti, and Pigmy Doves; a Shama; Giant Whydahs; a pair of Bourke's Parrakeets, and a few Sugar Birds. When the housekeeper, who takes my place in the care of the birds when I travel, has sufficient experience, more difficult birds will be added, such as small Tanagers and Sunbirds. As the garden is usually occupied by wild Humming-birds, it is not necessary to keep any in confinement where space is very limited. It is a constant delight to watch the birds from the window which constitutes a useful observation post.

Along the fence following this first aviary is a similar one, 28 feet long, 10 feet wide. It contains a pair of Palawan Peacock-Pheasants; pairs of Harlequin Quails, Bleeding-heart, Ashy and Diamond Doves, Diamond Sparrows, Australian Crimson Finches, several varieties of Zebra Finches, Red-crested Finches, Cuban Finches, Indian White-eyes, and a European Song Thrush.

There was an obvious location for another aviary between the bridge and the solid fence on the south side of the garden. It was only a question of roofing over the space between the wall and the bridge, and of building wire partitions under the bridge and on the sides. The result is a large flight, 50 feet and 20 feet, very high in the centre over the stream which flows in a deep gully. I keep there a few small ducks and teal, Mandarins, Puna and Sharp-winged Teal, Maned Geese, Lesser Indian Whistling-Ducks; some doves: Brush Bronze-wings, Cassin's, Peruvian Ground, Green-winged, Chiriqui Ground-Pigeons, and a few other birds such as Pekin Robins, Orange-headed Thrush, Spectacled Jay-Thrushes, a European Blackbird, Dyal Bird, Tricoloured Spreos, and Purple-headed Glossy Starlings.

These Californian aviaries are few in number and small in size compared to those at Clères and, in the long past, at Villers. But they are suited to the present circumstances and very attractive, giving me much pleasure. At past sixty I am just as thrilled as ever by watching my birds, and I still enjoy caring for them as I did when I was ten years old. Bird lovers are incorrigible, I am afraid.





THE AVIARIES BY THE HOUSE.



Copyright]

THE AVIARY UNDER THE BRIDGE.

[J. Delacour.







## BUDGERIGARS AT LIBERTY IN DEVON

By THE DUKE OF BEDFORD (Woburn, Bedfordshire, England)

The homing budgerigars at Endsleigh, near Tavistock, have now entered on their second season and are doing well, losses during the winter having been few. The foundation stock consisted of a few pairs of homers from Woburn and purchased untrained birds from two or three different sources. Of the purchased birds five cocks and three hens still remain, the rest of the flock, about sixty altogether, being made up of homing birds from Woburn and young bred in the aviary. As is usual, the non-homing foundation birds have not given a particularly good account of themselves and of those that remain only a cock and a hen go in and out of the aviary with any regularity, the remainder behaving as "non-exits", i.e. birds which do not go out at all. I am finding also that for flying at liberty the modern show type of budgerigar is not so good as a more slender, active, long-winged bird which would not satisfy the judges. The show budgerigar is not only apt to be slow-witted, but also slow in flight and, if it should go out, is more liable to fall a prey to Sparrowhawks which in this district are very abundant.

As at the beginning of the season I had more cocks than hens in the aviary, I sent down some spare homing hens from Woburn, intending to have two breeding teams in succession. The reason for this was that I had discovered that on no account must the "breeding atmosphere" of an aviary be upset by returning to the "resting" aviary, in the middle of the summer, all hens that have reared two broods, in order to prevent overbreeding. I had hoped to turn half the hens from the resting aviary into the liberty aviary about 15th February, and the remainder at the end of June when the first lot were returned to the resting aviary after rearing two broods. The plan, however, did not work out very satisfactorily either here or at Woburn as, although the majority of the unmated cocks did not interfere unduly with the breeding pairs, a few were very troublesome. In order to secure the double aim of maintaining the breeding atmosphere in the aviary until autumn while at the same time preventing individual pairs from overworking themselves, I have now limited, in the case of the adult birds, not the number of broods but the number of eggs they are allowed to hatch, and this plan promises to work extremely well. Those pairs which have reared two full broods are only allowed to hatch a couple of eggs in any subsequent clutches they may lay before the end of the season. The rearing of two young is not a serious strain on any hen budgerigar who has a mate to help her. Indeed, I think she keeps just as healthy and happy when so engaged as when condemned to a life of unnatural boredom in the hens' resting aviary.



Seeing that things were not going too well on the "double-shift" plan, I decided to take the risk, in mid-May, of adding to the breeding and liberty aviary nearly all the hens left in the resting aviary. Usually it is inadvisable to introduce new hens where others are breeding, as fighting and disturbance are very likely, but in this case fortunately the new hens, most of which were in heavy moult when put in caused no serious trouble. This, however, can hardly be said to have been due to the fact that, being in moult, they were not in breeding condition for, as always happens if you put moulting, albeit healthy hens in an aviary where breeding is going on, they immediately stopped moulting and started to take an interest in the nest-boxes, laying but very little later than those which are not in moult. It is, of course, well known that budgerigars, like other birds which nest in colonies, are, for some strange reason quite unconnected with physical health, much stimulated to nest by the presence of companions. My own view is that a hen budgerigar who would be slow to nest if kept in an aviary alone with her mate, goes to nest readily in an aviary containing other hens, not because she likes her female companions, but rather for the opposite reason. Her greatest joy in life is to own a nest which she knows another hen wants or, failing that, one so near to the nest of the other hen that she is aware that her proximity will cause the latter acute annoyance! This spirit in hen budgerigars is indeed somewhat akin to that of members of the British public who will always co-operate together much more loyally and effectively if inspired by hatred to a common enemy than they can ever be persuaded to do from the more Christian motive of love of their fellows!

When I first came to Devonshire in the middle of May the actual display of birds at liberty was a little disappointing. This was partly due to the fact that this year, like last, the first round of eggs had hatched rather badly, eight pairs producing only sixteen young birds. A further cause of trouble was a particularly objectionable Sparrowhawk which had been visiting the aviary very regularly and might have taken one or two of the young birds and driven others away. Normally a Sparrowhawk has considerable difficulty in capturing an adult budgerigar, which is too swift and wary, but it will take young ones not long out of the nest in addition to upsetting the nerves of the whole aviary. In this particular instance the hawk's visits had turned practically all the old breeding birds into non-exits as, discovering that the aviary and its shelter were a safe refuge, they made up their minds not to leave them, only the venturesome young birds continuing to fly in and out freely. Although we were never able to shoot it, the hawk discontinued its visits from the time I arrived and I set myself to making preparations for discouraging it or ending its career should it feel tempted to return. One quite useful method of discouragement is an effective scarecrow properly clothed, constructed,



and managed. The usual coat and hat on a stick left always in the same place are *quite* useless and even the shyest birds soon ignore them. To be of any real value a scarecrow must be decently dressed (!) ; its raiment, preferably showy, should be changed from time to time, as also, at fairly frequent intervals, should be its location, so that birds never come to accept it as an unvarying feature in the landscape. Most important of all is it that its face should have a pleasingly or unpleasingly human expression, for it is this particular feature which, more than any other, attracts the attention of birds and creates alarm.

With regard to methods of destroying the hawk, the gun is, of course, useful if the hawk's visits will only coincide with the periods which someone can devote to waiting for it. The only two effective hawk traps I know of are the pole-trap which is illegal, cruel, and likely to catch the wrong bird ; and the box-trap, on the model of what used to be known as Black's hawk-trap. This consists of a kind of large box of wire netting on a wooden frame. It has a false bottom divided from the upper part with wire netting and an open lid or top connected with a strong spring and a kind of perch inside the trap. In the bottom of the trap live sparrows are placed, in endeavouring to reach which by jumping on to an interior perch the hawk dislodges it and causes the spring to operate, bringing down the roof of the trap and leaving it a prisoner. The chief objection to a trap of this kind is that it is rather hard on the "bait", for *Passer domesticus* resents confinement so much more than other finch-like species that even I, who dislike him intensely, do not care to subject him to it for any length of time. In order to retain the advantages of the box-type of hawk-trap while eliminating the objections, I have invented an arrangement which, for its upper portion, has all the normal features, while the lower one consists of a roomy flight cage, or miniature aviary flight communicating with a comfortable shelter. In this small aviary I have put some Roller canaries which are very happy and contented in what are, for their kind, palatial quarters and which, should the hawk attempt an assault upon them cannot, of course, receive any injury.

The second round of young budgerigars which have now been flying for some weeks have provided an extremely lovely show as among them are some very attractive colours—opaline blues, lutinos, lemons, and rainbows. A lady visitor seeing them described it as "just like fairyland", a rather apt simile, for there is something close to Nature and yet unique and "unnatural" in its dainty beauty, in the spectacle at liberty of a small flock of graceful little birds, all of the same species yet of quite different and brilliant colours. Budgerigars, especially young birds a few weeks out of the nest, are particularly delightful in flight as they circle round and round like



domestic pigeons and frequently sweep by within a few feet of the observer. Those which are fully adult also, of course, make their contribution but, being less frisky and playful than the young and much taken up with domestic duties, they fly less frequently and continually, indulging for the most part in an early morning constitutional before returning to the aviary for the family duties of the day.

\* \* \*

## THE CAUSE AND CURE OF EYE-DISEASE

By P. H. HASTINGS (Portsmouth, England)

Having recently rejoined the Avicultural Society, I was very interested in the article by Dr. F. B. Lake on the Parrakeet Eye Disease. It appears to me by the description of the symptoms and drawings, identical with the condition found in a great number of freshly imported birds, especially insectivorous species.

For over thirty years I have been an importer of livestock from the tropics, specializing more in the insectivorous species than seed-eaters. During this period I would say that probably several thousands of birds have arrived with the disease in various stages. The Starling group appears to have a very large percentage with this complaint and another species in which it seems prevalent is the Pekin Robin.

In my early days it was my general practice, and I believe of other importers, painlessly to destroy the badly affected birds as no cure was known. However, about 1928 the manufacturing chemists with whom I was dealing for essential food ingredients, forwarded to me a copy of the book entitled *The Survey of Vitamins*, published by H.M. Medical Research Council in which there was an illustration of a rat suffering from this eye complaint and described as follows:—

The first symptom observed is a swelling of the eyelids which is followed by an inflamed condition of the conjunctiva. Hæmorrhagic and purulent discharges follow: the cornea becomes affected and ultimately blindness results. This seemed to me to be identical with the conditions I had observed in birds, and in this and subsequent publications, the disease is called Xerophthalmia and is proved beyond doubt to be the result of malnutrition, particularly and most conclusively in the lack of Vitamin A in the diet.

On the very day I read this paragraph, I received a rather large consignment of Starlings, and in the *Spreo* species particularly there were several very bad cases, and others with a more mild condition. I decided to put the information to a practical test. I isolated three cases which had very swollen eyes, almost as large as garden peas,



birds which in the normal way I would have destroyed at once. At about 4 p.m. I gave each bird three drops of best cod liver oil direct into the throat, and by about 8 p.m. there was a marked improvement in that the irritation seemed to have subsided, the birds discontinuing to rub their heads on the perch. I gave another three drops to each bird at about 10 p.m. that evening. The next morning, being very anxious to note improvement if any, I got up at 7 a.m., and went straight to the birdhouse. I was simply astounded at the result, all swelling had disappeared, the eyes were bright and full and there was no sign of the complaint other than the bareness around the eyes, caused by the continual rubbing.

Since then, as stated, I have had innumerable cases and in one particular consignment of Pekins I had about a hundred suffering with the complaint in various degrees, the worst I treated with a few drops into the beak, and the more mild cases were rapidly cured by normal feeding. In my whole experience since that first example of the cure, I cannot recall a single failure. In more recent years I have used Halibut Oil, as it is more potent, and a couple of drops into the beak will cure or rapidly cause a change for the better, the complete cure following with normal feeding with nutritious food. The rapid recovery of serious cases after the treatment has never failed to intrigue me.

In 1932 I wrote about this disease in the AVICULTURAL MAGAZINE and as a result of my article I was called in to the Hundridge Game Farm, at Hambledon, to treat seven pheasants which had the complaint. I gave a pen-filler to each bird direct into the beak. I was phoned the next day and informed that all birds were normal again and was thanked profusely.

I have also found this disease in mammals and quite recently I was asked to call at a neighbour's to treat a young greyhound of fourteen weeks. It was explained to me that the dog had, it seemed, knocked its head and there was a great swelling; it had been taken to a vet and some lotion was given for bathing the swelling. I went along and directly I saw the condition I said, malnutrition. They looked askance, being kindly folk, and said they were feeding as instructed by the breeder. The left eye was completely closed, the head on that side being twice as large as it should be, the right eye was not so badly affected, and the skin around the left eye bare of fur by continual rubbing. I gave the dog three Halibut Oil capsules at 8 p.m., and left two more for the owner to give before retiring. As in the case of the birds, recovery was phenomenal, the next morning there being no sign of any disease, swelling wholly disappeared and the puppy lively and skipping about in play. Other than the general thinness of the puppy and the bareness around the eye, no one would have ever believed it was in such a state the previous evening.



It does not appear that Dr. Lake has treated this condition in parrakeets as a vitamin deficiency disease. Should he have the opportunity of experimenting further, perhaps he will consider the treatment I have described. If any of our members have birds with such conditions, I would be pleased to endeavour to cure them, but I feel sure that if the treatment given above is carried out by any fancier, a cure will be effected and the chance of prolonged and painful suffering prevented.

I trust the information given will be instrumental in saving many birds the painful suffering caused by this affliction.

\* \* \*

## OBSERVATIONS ON CAPTIVE LANCEOLATED JAYS

By DEREK GOODWIN (Virginia Water, Surrey, England)

It was by merest chance that I first acquired this most delightful species. I was visiting a bird-dealer's in order to purchase some Glossy Starlings on behalf of a friend and whilst there could not refrain from looking round at his wares. Three Lanceolated Jays (*Garrulus lanceolatus*) at once attracted my attention. Two were sharing a cage and looking rather dejected, the third, caged alone, was in still worse plight, having one foot swollen to the size of a small crab-apple. On inquiry I was told that the latter would be sold to street traders who, so I gathered, make a weekly round of animal dealers and buy up cheap all the birds, puppies, etc., that are likely to die, for sale in the street markets on Sunday. As the dealer honestly admitted that he would only get a pound for the sick bird I paid over this sum and took it away, thinking that at least it would now be able to die unharassed.

Arrived home the crippled Jay ate mealworms eagerly and its death appeared less certain. I at once became the prey of conflicting impulses. On the one hand I had little cash and little spare aviary space (although shortly the loss of two young Magpies which joined up with a wild family and went off with them partly solved the latter problem), and so it would be folly to get more birds. On the other hand, would it not be cruel to keep the one Jay in solitude? and how much could I expect to learn of its behaviour from a solitary bird? Personal inclination thus rallied both science and sentiment to its aid, as it so often does, and the result was a foregone conclusion. The dealer agreed to sell the other two Jays for six pounds, in view of their poor condition, and even threw in a very excellent wicker travelling cage in which he dispatched them to me.



I was pleased to find that although somewhat thin, and in very scruffy plumage the two sound Jays did not appear to be sick in any way. I gave them plenty of mealworms, dug up a few cockchafer grubs for them on most days, added vitamin supplements to their soft-food (wholemeal sop), and gave them rather more meat than I would otherwise give a Jay. On this regime they soon showed vast improvement, although it was not until after the moult that they came into their full beauty of perfect plumage. It was early May when I got these birds. The crippled specimen became dominant over the other two and soon showed much improvement and its swollen foot went back to normal size, although incapable of use except as a "peg-leg". Actually, however, this would appear to have been just a dormant stage of the trouble afflicting it, as it died only fifteen months later.

In August, when the Jays were in moult, I acquired two more. These were picked out from six that a dealer had in a small outdoor aviary. Until that time I had had only a vague idea of the sex of my three birds but when the two newcomers were put in the aviary they at once took precedence over the original occupants, thus leading me to suspect, as later proved correct, that they were two cocks and the others all hens. They were colour-ringed and afterwards became known thereby : Green male, Yellow male, Red female, White female, and the Crippled hen. In December I acquired a sixth bird, which was given a blue ring and also turned out to be a hen.

Since nothing very exciting happened in the winter months I may here digress to give a brief description of this splendid bird for the benefit of those who do not know it. It is a smaller and more slightly built bird than our common Jay (*Garrulus glandarius*) with a proportionately longer tail and crest. It is a little larger than a Blue Jay (*Cyanocitta cristata*) and with rather similar pattern on wings and tail. The general body colour is a soft pinkish grey. The head and crest are black, the lanceolate throat feathers are white with black bases, those of the lower throat being black with white shaft-streaks, and those of the upper breast steel grey with white shaft-streaks. The wings and tail (when at rest) show mainly a soft, delicate blue, barred with black, the tail feathers and secondaries have black sub-terminal bands and broad white tips, and there is a white patch on the wing coverts. The bill is an odd greenish grey and the eyes dark brown. In its gait and skilful flight among branches this bird possibly excels our Common Jay in agility. When in good condition its plumage has a wonderful bloom comparable to that on a ripe plum or a really fit Java Sparrow (*Padda orizivora*). It may indeed be said of it, as Goldsmith said of the Swan, that "The eye wanders over it with insatiable pleasure and every part takes on a new grace with each new movement".

In its call-notes this species clearly shows its close relationship



to the Common Jay, the majority of its utterances being similar in sound and meaning. It is also an excellent and habitual mimic, and its soft warbling sub-song is composed largely of copied notes, as is the case with our bird. I have dealt elsewhere (Goodwin, 1952) more fully with a comparison of the voice and display of the two species.

By March the two male Jays, Green and Yellow, were giving their soft warbling sub-songs very frequently, and beginning also to indulge in somewhat louder mimicry. They uttered all sorts of bubbling, whistling, and mewling notes, some of them possibly imitations of various wild birds in their native Himalayas, although some, such as the calls of the Golden Pheasant, human whistling, and the whining bark of the next-door spaniel, had clearly been learnt since their capture. The females gave some whispering sub-song, but no loud and definite mimicry was established as coming from them. On 2nd March Green escaped, dashed off between the house and an outbuilding, and vanished somewhere in the front garden. I spent a fruitless and despairing few minutes vainly looking for him in near-by trees, but on returning to the aviary I found he had preceded me and was flying round trying to get back in. Needless to say I co-operated with his endeavours and he was soon safely under lock and key again.

Courtship-feeding was first seen on 23rd March, when Yellow fed the Crippled hen and Green fed White. From then on it was frequent and usually initiated by the male. He would take some food, prepare it for swallowing, then, holding it in his throat, would commence to give the food-offering note—a long-drawn, husky version of the usual mewling appeal-call—and approach the female. She would usually respond before taking the food, by displaying with head held up and making little sideways movements, uttering soft “chip-chip-chip” notes. This display, which is also often given by the male before or after courtship-feeding, is essentially of a placatory or appeasing nature. It can be considered as, in a sense, the opposite of the male’s typical display, in which he erects his crest and most of the body-feathers and presents himself laterally, reaching forward on his perch and uttering a “display-phrase” which may consist of copied sounds. This display is used both towards the mate and towards rivals, and in the latter context is threatening in character. In the Common Jay both sexes use this display, but in the Lanceolated Jay I have only rarely seen it—at low intensity—given by a female.

From the end of March on the two male birds displayed extremely frequently, chiefly to each other, perching a foot apart and each making himself look as imposing as possible in an unsuccessful attempt to overawe his rival. It was noticeable that although Green still gave way to the dominant male Yellow at bath or food dish, yet when they were both in displaying mood he refused to be intimidated by him. When displaying the males usually uttered a soft, piping,



1.—Male in full intensity lateral display.



1.

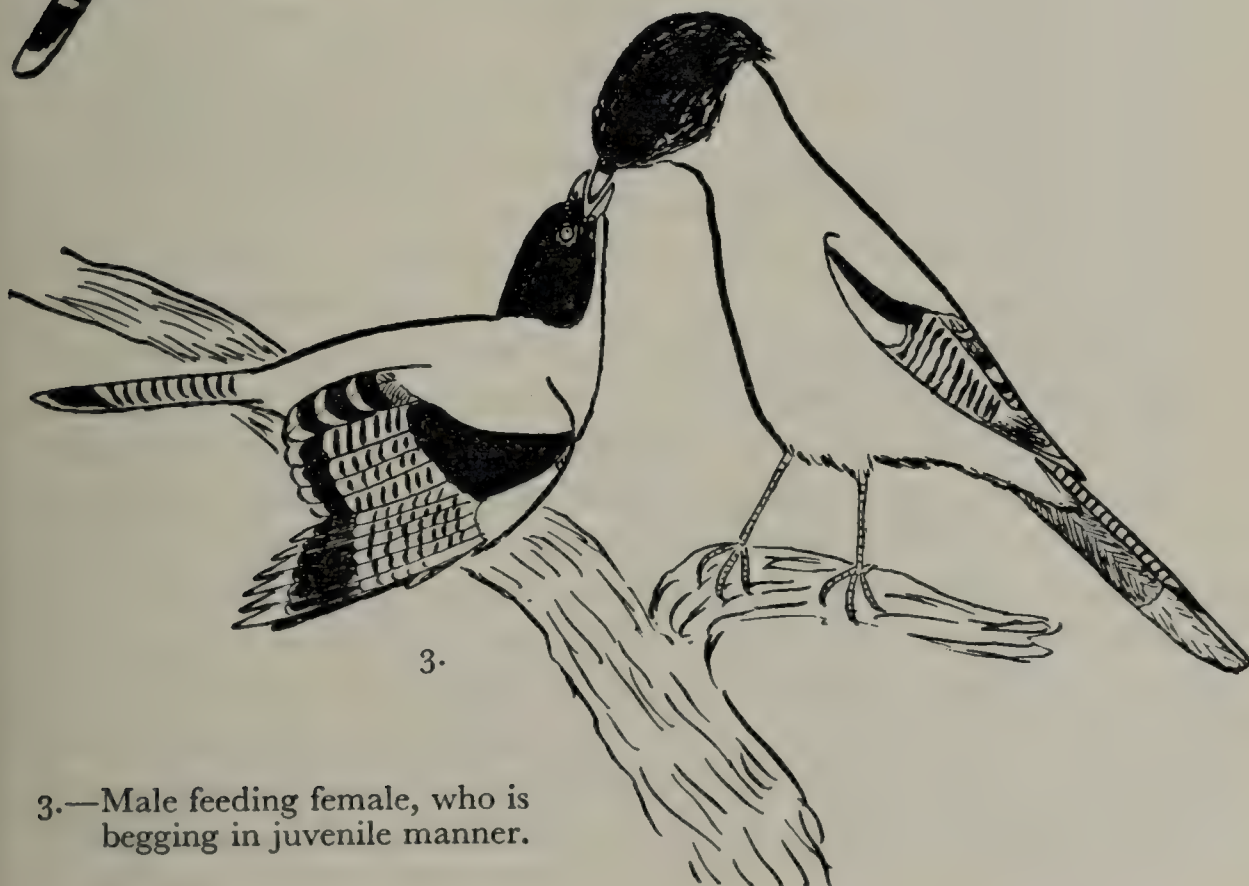


2b.

2a and 2b.—Different versions of the chin-up display.



2a.



3.

3.—Male feeding female, who is begging in juvenile manner.



sibilant "Tsee-tsee-tsee-up!" sometimes a loud, husky mewing note (probably homologous with the hissing sounds that male Common Jays usually incorporate in their display-phrases), and occasionally the "Kraah" note, or copied sounds. On one occasion when Yellow was in a state of intense angry excitement he displayed at Green screeching out a loud imitation of the "crow" of a cock Golden Pheasant. Green, as if not to be outdone, displayed back at him, barking loudly (imitation of a dog) as he did so.

On 17th April I separated the two pairs (the odd hens had been removed previously) and placed Green and White in an open aviary about 40 feet by 20, leaving Yellow and the Crippled hen in a smaller aviary about 28 by 9, with a shelter shed about 5 by 5 attached. Once the birds were separated the males displayed much less often and less intensely.

Within a couple of days I noticed that Green and his mate were taking much interest in the upper branches of a small apple tree which had been cut off and placed in a slanting position in one corner of the aviary. At 7 p.m. I fixed some wire netting in a fork about 7 feet high in such a way that a bowl-shaped support was formed. The male soon came back to the tree. Hopping about the branches he came on the artificial nest-site. He at once entered it, turning round and giving the soft chirruping notes. The hen flew to him, and perched on the edge, they chirruped and gave the "chin-up" display together. Green picked up and dropped nesting material shortly after, but he did not carry any to the nest-site till the following day. Thereafter he did some building each day. He appeared to have great difficulty in selecting suitable material. In a wild state this species is said to line its nest with the long black rhizoids of a fungus (Whistler, 1928) and although my birds finally achieved a beautiful nest from twigs, heather stems, rootlets, and coconut fibre the male at any rate would discard numberless pieces of material before finding one that suited him. For a long time little tangible result seemed to accrue from his efforts, but on the 30th April much more solid work was evidently done on the nest and it looked near completion. I suspect that the female did some building, as on the morning of 3rd May I found her on the nest at 7.40 a.m. She soon flew off, collected some fibres from the ground, flew to the nest-site, but seeing me looking flew off again. Otherwise she was never seen either with building material or at the nest during its construction. She gave the impression of being utterly disinterested in the male's building efforts, but if I went near the nest and looked at it she would "give the game away" by flying up to perch a foot or so away and screaming angrily at me. It was noticeable that when not building the male also kept away from the nest, although previous to its commencement both birds had been constantly in the tree that held it. From 3rd May the hen began to beg like a young bird, uttering the



juvenile version of the appeal call and (sometimes) fluttering her wings. She begged constantly, giving her pleading "childish" cry every twenty seconds or so, even continuing to do so when she was actually eating. Her mate was not thereby moved to feed her any more frequently than he had been doing for the past three weeks.

She went on the nest at about 6.15 a.m. on 5th May, and was still sitting when I left home at 7.45, but when I got back in the evening she was off the nest, which was empty. Next morning she again went on the nest. No eggs had been laid at 7.45 that morning when, unable to bear the suspense, I put her off the nest and felt in it. Presumably she laid later that morning, however, as she was sitting when I got home that evening and at 7 p.m. on 7th May there were two eggs in nest. Two more followed at daily intervals. The eggs were of no particularly beauty, being merely small editions of the eggs of the Common Jay in appearance.

For some days I was torn between a rational assumption that "the Powers that be" would never vouchsafe to me the luck to be the first person to breed this species, and an irrational optimism that I should in fact succeed in so doing. As day followed day and all seemed well, wild hopes began to get the upper hand of cold reason as, luckily for human peace of mind, they commonly do. The female sat on the nest continuously from the time the first egg was laid. She came off several times daily for periods of up to ten minutes—but usually much less—to exercise, bathe, and preen herself. The male fed her both on and off the nest, she received the food with juvenile notes and wing-flutterings. Often she would leave the nest immediately after having taken food from the male and whilst he was still at the nest. When this happened he never stayed to guard, much less to cover the eggs, but at once flew off after his mate.

On the fourteenth morning from the laying of the last egg I felt it must be a case of "any moment now". I was well prepared for the hoped-for happy events. I had a large stock of mealworms that had been fed, if not on the fat of the land at least in part on the fat of the sea (food treated with C.L.O.), and had also bought a supply of Kentish Glory caterpillars, the entomological dealers having had no cheaper and more mundane species for sale at that time. I may say I am well aware of the danger of presuming on the kindness of Fate, but when young birds are on the way one cannot abide by the wise adage "not to fill one's jar with water till one has caught a fish". On that morning I gave Green some insects and watched carefully when he fed White with them. She accepted them as usual, and did not look beneath her before swallowing them, so I gathered that even though the eggs might be chipped it was not likely that any were yet hatched.

When I returned that evening the first thing I noticed was White off the nest. My heart sank. I guessed instantly what had happened.



Then I tried to believe that she was only off for exercise, she would soon go back. Needless to say she did nothing of the kind, and the nest, on inspection, proved to be empty, and clean as the proverbial whistle.

Presumably the birds, or more probably only the female, had eaten the hatching eggs, or new-hatched young. This behaviour is known to happen not rarely with insect-eating birds in captivity and I have strong grounds for suspecting that it may occasionally occur in the wild. It is due not I think to the bird's reproductive urge suddenly dying away (which would result in the nestlings being treated as any other small creature), but rather to a hypertrophy or perversion of the strong instinct which such birds show to keep the nest clean by eating all extraneous objects (eggshells, fæces, fallen leaves, etc.), that appear in it. Probably this only happens when some disturbing influence has upset the sitting bird. In the case of these Jays there was a loud and noisy party in the adjoining garden on the fateful day and this may have disturbed them.

The behaviour of the pair that evening showed that they were in some mental stress. Both, but especially the male, kept returning to the nest and looking into it as if they could not convince themselves that it was really empty. When I went near the nest the female came dashing up and scolded at me just as she had before. Quite clearly she did not in any way correlate her eating of the eggs with their mysterious disappearance! She begged constantly to her mate, but Green, instead of feeding her, snapped at her angrily and sometimes even attacked her. This was not, of course, because he thought that she was responsible for the loss of the eggs (as no doubt she was) but simply that his bereavement had put him in an aggressive mood, and it needed only slight stimulus for him to vent his feelings on his mate in default of any other victim. Homologous behaviour in other bipeds is, of course, not uncommon.

Next morning the pair had got over their loss and the male was once more feeding his mate solicitously. He was still in breeding condition and within a few days was building a second nest in a basket fixed in a tree at the opposite end of the aviary. White, to my dismay, showed no interest whatever in the new nest. She ceased to beg in juvenile manner and showed less enthusiasm for courtship-feeding. A day or two later, as she was preening, a tail feather came away in her bill. She held it for a second or two with that puzzled "Good God! am I falling to pieces?" expression which Jays often show when this happens, and I knew that all chance of her breeding again that year was gone.

Whilst all this had been going on Yellow and his mate the Crippled hen had, up to a point, shown similar behaviour. This female never showed the slightest signs of wishing to nest but she had commenced



to beg in juvenile manner at the same time as White had done. Although this begging coincided with the breeding season I think it may not have been caused by the reproductive drive. This bird gradually wasted away until she died in August and it seems possible that her illness induced in her a similar psychological mood of "dependence" to that normally aroused in an incubating female. Infantile behaviour (or perhaps one should rather say behaviour that is normally shown most strongly in infancy) by adult animals that are in a weak state through hunger or sickness is not infrequent, one need look no further than man and the domestic Pigeon to see examples of it. The male Yellow frequently carried nesting material about the aviary and deposited some of it in an artificial site inside the shelter, where perhaps he would have nested had his mate shown a reciprocal interest. I must confess that I made very few observations on the two females Blue and Red during this time, so I am not sure if they showed any breeding behaviour. They certainly did not pair together.

On 10th June, in the early evening, I put the other four birds into the large aviary with Green and White. These two showed some aggression towards the newcomers, displaying at them and attacking them, but they were not systematic or persistent about it and soon ceased to do so. Next morning Yellow displayed near Green's first nest-site, and the female Blue, who was near, at once responded with the chin-up display. Green, observing this, flew up, drove off Yellow, and went into display himself. Blue, acting on the proverb about the brave and the fair, then displayed submissively to him. He hopped into the nest site and pecked (? low-intensity building movement) at a twig. Blue at once showed great excitement, she hopped to the edge of the site, gave most intense versions of the chin-up display and quivered her tail violently. Green did not respond, however, but remained "true" to his old mate. Within a few weeks all were in moult and all hopes of breeding from them that year were over. They are now (12th February, 1953) showing signs of awakening sexual activity once more, and I live in hope, though hardly in expectation, that I shall have better luck with them in 1953.

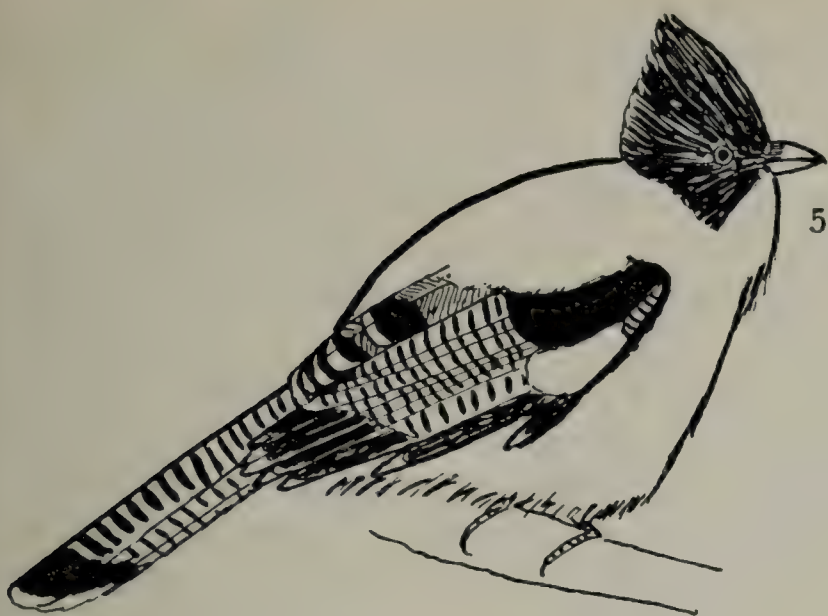
So far as one can judge from what has been written about this bird its habits in freedom (Ali, 1949 ; Whistler, 1928) would appear to be very similar to those of the Common Jay. Its movements are very similar and it has the same manner of commonly hopping about with the tail slightly raised and the tips of both wings lying on the same side of the tail, which gives it a very jaunty appearance. It hides surplus food—especially nuts and acorns—in the same way, pushing it into the ground and then carefully covering it up or else sticking it into some crevice or hole above the ground. It remembers where it has hidden its booty and in a wild state probably relies largely on previously hidden acorns for its winter food.



My Lanceolated Jays are fond of sun-bathing which they do—usually on the ground—in the typical passerine manner. The bird leans over to one side with feathers fluffed out, crest erect, and commonly with wing and tail on side nearest the sun somewhat spread. Bathing, preening, and scratching are also performed in the typical passerine manner. At night my birds roost well hidden in the foliage of *Cupressus* trees, or in conifer branches fixed in the aviary. They go to roost early (unless some alarm or excitement at the normal roosting time inhibits them from so doing) whilst it is still perfectly light and once on their roosting perches do not come off again that evening unless greatly disturbed. Even giving mealworms to a companion still up will seldom induce a roosting bird to come out, although if in such a case it is deliberately driven out it will at once commence to feed readily. Doubtless this behaviour has protective value in the wild state by rendering the roosting bird less liable to be discovered by owls or other crepuscular or nocturnal enemies.

In captivity I have found this bird as hardy and easy to cater for as the Common Jay. Many bird-keepers, scientists and laymen alike, seem to find difficulty in keeping Jays in good condition. Primarily I think this is because they often try to feed them on horrible mixtures of ground-up dog biscuit, eked out with lumps of horsemeat, and with the addition of chopped-up root vegetables more suitable for cows than for corvids. Such a diet may suit Crows and Ravens (at any rate in zoos where they obtain all sorts of extras from the public) fairly well, but I have never known a Jay to thrive on such a regime. For these birds a variety of foods is necessary (though no doubt if their exact food requirements were fully known a suitable artificial food could be concocted). Acorns, which are appreciated just as much when sprouting as when fresh, form an excellent staple as long as they can be obtained, and with a little trouble the Jay-keeper should be able to lay in a stock in autumn to last him till February or March. At other times wholemeal sop, dry wholemeal bread, chestnuts, peanuts, etc., can make up the bulk of the food (and should be used to vary it even when acorns are plentiful). This should be varied with any insects obtainable, small pieces of meat (horse or otherwise, cooked or raw), cooked (scrambled) egg, and cheese. These extras are best fed by hand and only as much as the birds will swallow on the spot, as owing to the amount of dirt that will adhere to them it is not desirable that they should be hidden for future consumption which they otherwise will be. For the oft maligned mealworm I have nothing but praise. Doubtless if they are inadequately fed they do not contain sufficient vitamins, but I cannot help thinking that much of the objection to them arises from that puritan streak that makes some people think that anything that a creature—be it man or bird—obviously delights in *must* be bad for it. I try to give all my Jays a feed of mealworms





5.—Active bird in cold weather. Note slightly spread wing showing first and second primaries.



6.—Active bird in warm weather. A similar sleeking down of the plumage is shown in uninhibited fear.

6.



7.



7.—Sun-bathing postures, side and front views.

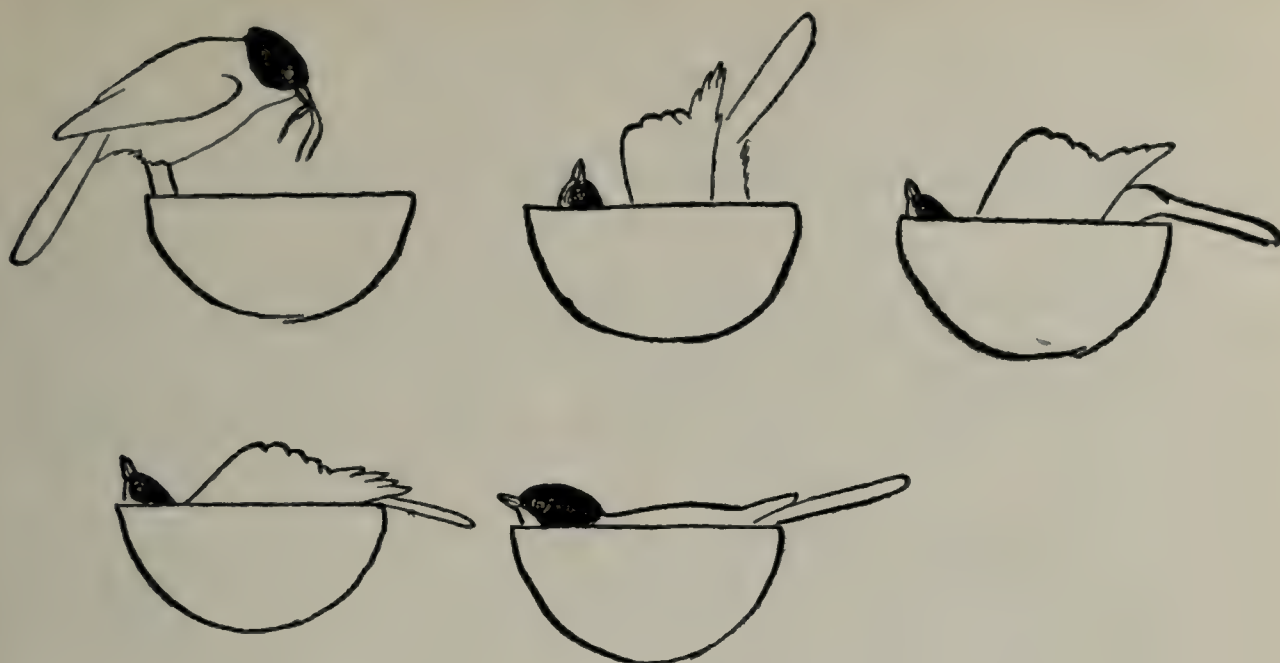


at least once or twice a week—more often when they are moulting—and if I were wealthier I would certainly give them a larger supply of these insects. Among the many wild insects that Jays relish may be mentioned cockchafer which, during the few May-days that they are on the wing, may be caught in numbers clinging about the street lamps after dark. Lay observers of the aviculturist capturing them are, however, apt to think that he is either mad, drunk, or attempting to sabotage the lighting system. Jays are fond of fruit, oranges and apples are best liked and cheapest, they do not like soft fruits enough to warrant the price, although if one grows one's own they can be given. Elderberries are the only wild fruit they seem keen on. Needless to say one must use one's intelligence in feeding, add vitamin supplements to the soft food if considered necessary and allow plenty of animal food to growing young birds (these cannot at first digest nuts or acorns) and recently purchased adults that are thin and run down. Leafmould (the top surface layer from woodland) makes an excellent floor covering for Jays and gives them ample scope for food burying. In large aviaries natural turf looks nice, but is apt to grow so long that the Jays will seldom descend into it. I sprinkle plenty of powdered lime about before putting down fresh leafmould, and put lime frequently under roosting perches and elsewhere where the ground is likely to be much fouled.

Plenty of fresh water for bathing and drinking must always be available. Anting is another instinctive impulse which should be catered for, though few aviculturists give their birds the opportunity to indulge it. A sack of wood-ants (just shovel nest, ants, and all into a sack) tipped out on the floor of the aviary every three weeks or so in summer will provide a most interesting spectacle for their owner as well as gratifying the birds. It is of interest that the Lanceolated Jay acts in the usual manner, picking up the ants in its bill and bringing forward one wing at a time, whereas the Common Jay brings forward both wings at a time with a peculiar shuddering movement, spreads them widely with the primaries brushing the ground and does not pick up ants in its bill, although it makes head movements that look at a distance as if it is doing so.

*Note.*—The sketches illustrating this article are only intended to give a general idea of some characteristic postures. No attempt has been made at accuracy of fine detail. The discerning will, for instance, note a regrettable discrepancy in the number of tail bars in the different drawings, and if they want to know how many the bird in fact possesses I fear they must visit their nearest museum and look at a stuffed one!





4.—Male nest-building.

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AN INCIDENT CONCERNING THE PERUVIAN  
TORRENT DUCK

By STANTON PHILLIPS (Long Beach, California, U.S.A.)

A correct interpretation of the actions of any waterfowl as little known as the Peruvian Torrent Duck is difficult. This is particularly true when the bird involved demonstrates an apparently large variety of behaviour patterns. With this in mind I submit the following observation :—

It was originally my intention in going to Peru to capture and keep in captivity the Peruvian Torrent Duck. In pursuit of this end a group was formed in Lima consisting of Dr. Ortiz de la Puente, Director of the birds and mammals section of the Javier Prado Museum of Natural History ; Mr. Luis Riva, engineer and amateur ornithologist ; and myself.

Reaching Yacca, a hacienda at 2,500 metres on the Rio Canete, we established camp. The river was swollen as are most Andean streams during the month of January and, since this made the use of our nets impracticable, we contented ourselves with whatever observations were possible. Mr. Riva and I were walking on a small hill downstream when, at a distance of approximately 500 feet before us, we saw a mature drake poised motionless on a jutting midstream rock. We seated ourselves, focused binoculars, and waited. With great dignity it bowed deeply, at the same time pushing the tip of its tail upward to a height exceeding that of its vertically extended neck and head. The entire action appeared to be pendulum-like with the feet serving as inverted fulcrums. After each such four or five second performance, it would resume its usual stance which was marked only by an occasional turn of the head. It would then advance 6 to 12 inches and perform again. With about fifteen of these completed it had reached the end of the rock and abruptly flew cross-stream into the less torrential side waters. Here it disappeared.

Our temptation to believe that we were the objects of the display was somewhat dispelled when, after arriving within 50 feet of the rock, we discovered a mature female standing on a portion of the rock where our original point of observation made such discovery impossible. We observed her for about ten minutes and, although she could see our every movement, she gave no sign of fear. She finally and leisurely slipped into the water and floated downstream.

The stimulating agent for the drake's conduct could be anything, of course, including the aforementioned female, ourselves, a twig in the throat, or maybe another female. It was probably the latter.









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[Beck's Fotohandel

QUETZELS IN AVIARY IN LOUISE BIRD HALL, WASSENAAR ZOO.



## THE LOUISE BIRD HALL AT WASSENAAR ZOO

By G. DE GOEDEREN (Amsterdam, Holland)

In the January–February number of the AVICULTURAL MAGAZINE I was already able to lift the edge of the curtain concerning the Louise Hall, the new birdhouse of Wassenaar Zoo. When this article appears the Louise Hall will be open and I would like to take my readers for a walk through this new building.

When entering the birdhouse we are at once confronted with the large centre aviaries which are approximately 30 feet long and wide and about 14 feet high. All of them are planted with various types of vegetation which is gradually changing. The first aviary contains a marvellous pair of Lesser Birds of Paradise which in this large enclosure can freely use their power of flight. It is a very beautiful sight indeed to see these birds, but imagine the sight of half a dozen fully feathered Quetzals flying in all their beauty in the tree-tops of the next aviary! Dierenpark "Wassenaar" was one of the first zoos that ever had Quetzals in its collection, but one must see these beautiful birds here in quite natural surroundings fully to grasp their beauty.

The next centre aviary contains quite a number of species of Touracos, among which there are a Senegal Violet Plantain-eater (*Musophaga violacea*), some White-breasted Touracos (*Corythaixoides leucogaster*) (labelled Touraco *Gymnoschizorhis personata*), and Guinea Touracos (*Turacus persa*). Victoria Crowned Pigeons, together with Indian Blue Rollers and Cotton Teal inhabit the next enclosure. Knot-willows are the favourite resting-place of the Rollers, in their beautiful flight range above the Pigeons and Teal, which are chiefly confined to the lower part. A small pond extends into a creek in the next aviary, where the vegetation gives the impression of a swamp and where various species of Plover-like birds and Rallidae are to be seen with various Fruit Pigeons and other colourful birds in the tree-tops. Trumpeters, Red-billed Curassows, Piping Crows, and various smaller Hornbills are found in the aviaries. Stretching along both sides of the birdhouse are forty-eight smaller aviaries, generally about 5 feet wide and 10 feet long, in which we find a great number of very rare species. There are both the Scarlet Cock-of-the-Rock and the normal Cock-of-the-Rock, both in splendid condition, Red (*Paradisea rubra*), Wilson's (*Schlegelia wilsonii*), King, and Magnificent Birds of Paradise, European Bee-eaters, various Toucans and Toucanets, Indian Sunbirds, Humming Birds, numerous Tanagers, and an impressive collection of Lories and Lorikeets as well as Australian parrakeets.

It would be too much to give separately the names of all these species, but I cannot remember ever having seen a more complete



collection. Needless to say that these smaller aviaries are planted with various bushes and flowers (except, of course, those that contain parrot-like birds), and in doing so the utmost care was taken to consider the biological needs of the birds.

In addition to these larger enclosures approximately forty smaller cages are reserved for single birds, most of them parrots. Among them Golden Conures, Hawk-headed Parrots, Crimson-breasted Conures (*Pyrrhura rhodogaster*), and Levaillant's Barbets.

At the farthest side of the birdhouse the vegetation of the central aviaries is gradually replaced by towering rocks containing some large aquaria for cold water fish and at the same time concealing a bird kitchen and food store. There is also a modern hospital room with laboratory.

The former birdhouse is now being rebuilt and will chiefly contain the larger species of parrots, such as the rare Kea (*Nestor notabilis*), Funereal, Gang-gang, Leadbeater's Cockatoos, Macaws, etc.

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## PHEASANT KEEPING IN SWAZILAND

By Major H. R. HENDY (Mbabana, Swaziland, S. Africa)

I have travelled in most parts of the world, but in my opinion Swaziland surpasses them all in climate and scenic beauty. Frost is very rare indeed, and though in the summer it inclines to be warm, the evenings are always cool. The climate is most suitable for the rearing of birds, especially Pheasants. Of these I have a large collection, amounting at the present time to twenty species. These include Monals, Brown and Blue Eared Manchurians, Versicolors, Germain's Peacocks, Blacknecks, Mongolians, Chinese, Melanistic Mutants, Whites, Goldens, Silvers, Lady Amherst's, Elliot's, Cheers, Nepal Kaleegs, Swinhoes, Siamese Firebacks, and Reeves's. I should very much like to have Tragopans and other species of Firebacks.

To look after my Pheasants and other birds which I shall mention later, I have five native boys under an Induna or headboy, and it is a constant daily task to supervise them and keep things clean and sanitary. I must, however, go at least once a month to Johannesburg which is 235 miles away where is my business and where I must stay for periods ranging from a few days to two weeks. On account of these necessary absences I have at times lost valuable stock. Without my business, however, I could not afford what in South Africa is an expensive hobby. It has the added advantage that it prevents me growing old too quickly. I do not know what I would do without it, and one of my greatest joys is to receive letters from different parts of the world where I have written to for rare birds, from Singapore,



for instance, whence may come the fabulous Argus Pheasant. Yet when I return from Johannesburg I invariably find I have lost birds due to the inability of the native boys ever to discern signs of sickness or that a bird is off its feed.

Once a week every pen and house, and I have over a hundred, is sprayed with D.D.T., and every day without exception every pen is raked and cleaned of all manure and stale food. During the breeding season I employ a small boy or Unfaam to do nothing else but walk round all the pens and collect the eggs, for egg-eating can become a serious habit, and this is the only way I know to prevent it. Every egg is marked with the number of the pen and the date, and is then stamped with the name of the species of Pheasant. To hatch these eggs I have built two large circular pens, each containing twelve smaller pens, each consisting of a small house and run. I put the broodies in these smaller pens for a couple of nights to make sure they want to sit, and I then place the Pheasant eggs under them. I use as broodies White Silkies, Light Sussex, and good old Kaffir hens, which are always going broody, and which are of all colours, shapes, and sizes, having been bred by the natives for many generations. I make sure they are free of any disease.

A complete record is kept of all the eggs under each hen, and the day they are due to hatch out. The moment the chicks are hatched, they are whisked away to brooders, all of which have an enclosed outdoor run. These brooders are paraffin-heated, as the electric supply here is uncertain, especially during the severe lightning storms which we have. At the height of the breeding season I have as many as forty or fifty hens sitting at one time. The overflow from the round pens is accommodated in nests specially built in a large room.

Feeding presents a problem. We have no balanced ration especially made by manufacturers for Pheasants. We can obtain a balanced ration for poultry, but it does not contain ingredients essential for Pheasants. Fortunately, however, my property is surrounded by hundreds of ant heaps, so I can give my newly-born chicks plenty of ants and their eggs. They just eat these by the thousand, and thrive wonderfully, and this is all they eat for the first few days. They always have biscuit meal mixed with raw liver, calcium, Vetemul (Vitamin A and D), egg custard, and the yolk of hard boiled egg. In addition they get finely-chopped lettuce. After four weeks I give them the balanced poultry chick mash to which I add buck wheat, Kaffir corn, wheat, millet, and barley. The ants, however, seem to remain their favourite food until they are weaned and placed in the larger outdoor pens.

I pinion most birds at about six weeks old.

This last season I tried the experiment of selling some Pheasant eggs to encourage other breeders in South Africa. Unfortunately it was



not an outstanding success due to the rough handling of the packages by the postal authorities. The eggs arrived intact, but the airsacs seem to have been damaged and consequently few eggs hatched.

The question might be asked whether in view of the ideal weather conditions, birds could not be bred on a large scale for shooting, but this has been tried on several occasions only to end in dismal failure. This was due for the most part to the many vermin we have in South Africa. Meercats, leopards and hawks kill off the young stock before they have a chance to become acclimatized. There is also the difficulty of obtaining sufficient cover for the birds when they are released. The experiment has been tried in the Cape, Natal, and elsewhere without success.

Besides the Pheasants I have a varied collection of other larger birds. I have Kenya Crested Cranes, Stanley Cranes, Sarus Cranes, Demoiselle and Lilford Cranes, White, Black, and Black-necked Swans, Flamingoes, Curassows, and Toucans from Brazil. I have all types of Guinea-fowl, including the beautiful Vulturine, which is breeding well. Then there is the Secretary Bird which is fed every morning with a large juicy rat. The Australian Brush Turkey and the Chukar Partridge are also included in my collection, but I have not been successful with the latter, and need some new blood.

I also have African Spurwing, Egyptian, Barnicle, Siberian, Red-Breasted, Australian Cereopsis and White-fronted Geese, and I have among ducks the European Sheld, the South African Sheld, the rare South African Black Duck, Mallards, and, of course, the lovely Carolinas and Mandarins. I have, too, Peacocks and a recently imported pair of White Peacocks which have already bred. I have thus a varied assortment, and undoubtedly the largest and most comprehensive collection in South Africa. I cannot say I am successful in breeding them all.

All the birds, with the exception of those in the Pheasant breeding pens, are kept in large paddocks which I have landscaped with trees, green grass, and where necessary small ponds or dams with running water. The many paddocks are so arranged as to harmonize with the gardens around my house. There are not a lot of unsightly fences, except where absolutely necessary and then these are covered with the prolific Grenadilla Vine. Our rainfall is 56 inches, so gardens are possible the year round.

At times, however, when I want to sit quietly and think over my past misdeeds, I can sit in a large greenhouse which I recently imported from England and look at my begonias and gloxinias, and other beautiful hothouse flowers, and through the doorway I can see the Cranes dancing their afternoon dances, and when the Sarus Cranes start the same antics, one cannot but be amused at the ungainly way in which they imitate the graceful Stanley.



## OBITUARIES

## THE MARQUESS HACHISUKA

Masauji, eighteenth Marquess Hachisuka, Ph.D., Sc.D., died suddenly of a heart ailment on 14th May, 1953, at his home at Atami, Japan, at the age of 50. He appeared to be in such good health that his untimely demise was quite unexpected.

Marquess Hachisuka will be greatly missed all over the world. He was born and first educated in Japan until, at the age of 19, he came to Europe to complete his training in the Western way. The writer can remember when he first met him, in Paris in 1922. Prince N. Takatsukasa, then staying in France, was to dine at our house on a certain day, when he asked if he could bring a young relative of his just arrived from Japan. He then introduced Masauji Hachisuka. Under the guidance of Baron Hayashi, the Japanese Ambassador in London and a friend of his father, Vice-President of the Japanese House of Peers, he pursued zoological studies at Cambridge University during the next five years, finally graduating before he returned to Japan, through America in 1927, in company with the writer. The colourful welcome given to him by the aristocracy and the officials of Japan, headed by his father and his uncle, Prince Tokugawa, the last Shogun, still remains vivid in my memory. We later travelled together to Korea and China; he conducted an expedition to the Philippines in 1928-9 but he soon returned to Europe, where he stayed until 1934. He had previously travelled a good deal in Europe and North Africa, and went to the Belgian Congo with the late Jean-Marie Derscheid; he also paid a lengthy visit to the King and Queen of Bulgaria.

During all these years Hachisuka was one of our inner circle of European bird-friends. He attended meetings and conventions regularly in England, France, and elsewhere. Whilst travelling back to Japan through the United States he fell seriously ill at Los Angeles and remained there for four years, during which he completely recovered. The writer spent several months with him in 1936-7 at Pasadena and has never seen him again since. In the course of these years spent in California, he had made many close friends there.

Hachisuka returned to Japan in 1938, on his father's death, and he soon married Chiye Nagamini, of Los Angeles. They had a daughter, now being educated in California.

The war period was difficult for him because of his Western ways and friendships. After peace was restored, his wealth greatly diminished, he lived quietly at Atami, where he had built a Moorish-styled house to his own liking, again surrounded himself with birds, resumed his studies, and carried on an assiduous correspondence with his old friends in America and in Europe. His unexpectedly early death is a great shock to them.



Hachisuka was a true lover of birds, live birds in freedom and captivity, as well as museum specimens. As an aviculturist he kept and raised many species in Japan, particularly pheasants. He collected bird skins extensively in the Philippines and elsewhere, and also acquired private collections. Most of his early work on birds was done in the museum at Tring and in London.

His publications were very numerous. Besides many articles and notes in the *Avicultural Magazine*, *L'Oiseau*, the *Ibis*, the *B.O.C. Bulletin*, *Tori*, and other periodicals, he had written books on the birds of Egypt, Iceland, the Philippines, Hainan, Formosa, and a treatise on bird variation. His splendid book on *The Dodo and Kindred Birds* has just come out, but he never saw it. He had been working lately on a book of birds of China.

Although Marquess Hachisuka had been unwillingly separated from his Western friends during the last fifteen years his memory has remained vivid in their minds, as well as their affection for him.

J. D.

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#### MADAME E. LÉCALLIER

Mme. E. Lécallier has recently died in Brittany in her 74th year. Many of our members will remember her and her huge collection of birds which she kept at Chateau de la Villette and in other gardens around Elbeuf, in Normandy, between 1920 and 1940. Besides a number of park animals (Blackbucks, Muntjacs, Wallabies, etc.) and birds (Cranes, Rheas, Emus, waterfowl and screamers, game-birds), she possessed hundreds of rare parrakeets, doves, and small birds of all sorts in row upon row of roomy and practical aviaries, and in several large bird rooms. She was exceedingly successful in breeding many rare species, a number for the first time in captivity, as well as more ordinary ones. Accounts of her achievements are found in our Magazine and in *L'Oiseau*. The remnants of her collection were wiped out by the 1940 invasion and she had since lived with one or the other of her numerous children in Normandy and in Brittany. She had missed her birds greatly.

The writer had long been a close friend and neighbour of hers and we passed many happy hours discussing birds and visiting each other's aviaries.

With Mme. Lécallier one of the great bird collectors of the between-war era has disappeared and her friends feel her loss deeply.

J. D.

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## LONDON ZOO NOTES

BY JOHN YEALLAND

Five of the birds received during the past two months are new to the collection. They are a Ceylonese Hornbill (*Tockus griseus gingalensis*) ; a South African Grey Hornbill (*Tockus nasutus ephraim*) ; a Black-spotted Hangnest (*Icterus pectoralis*) ; a Malayan Green-billed Malkoha (*Rhopodytes tristis longicaudata*), and a Kenya Eagle-Owl (*Bubo capensis mackinderi*).

Two Blue Jays (*Cyanocitta cristata*) ; a pair of American Robins—or Migratory Thrushes (*Turdus migratorius*)—and a Wood Thrush (*Hylocichla mustelina*) have been presented by New York Zoological Society.

The Migratory Thrushes nested soon after arrival and a fine young bird has already left the nest. The Wood Thrush, a tame and charming bird very like the Song Thrush but considerably smaller, also laid but had no mate.

Two Lidth's Jays (*Lalocitta lidthi*), of which a coloured plate appeared in the Magazine during 1936, and two Soemmerring's Copper Pheasants (*Syrnaticus soemmerringi*) were presented by Veno Zoological Gardens, Tokyo ; two Sharp-winged Teal (*Anas flavirostris oxypterus*) by the Severn Wildfowl Trust ; and a Short-eared Owl (*Asio flammeus*) by Professor Pumphrey, thus completing the collection of British nesting owls.

Mr. Hawke sent a gift from Lourenco Marques of the South African Grey Hornbill already mentioned ; a pair of Levillant's Barbets (*Trachyphonus vaillanti*) ; a pair of Fiscal Shrikes (*Fiscus collaris*) ; a Red-backed Shrike (*Lanius collurio*), and a Delalande's Green Pigeon (*Treron delalandii*). Mr. Trevor Crewes presented a Japanese Blue Flycatcher (*Cyanoptila cyanomelaena*) ; Mr. A. V. Griffiths a pair of Bobolinks (*Dolichonyx oryzivorus*) ; Mr. W. T. Dring a Blue Grosbeak (*Guiraca caerulea*), and Mr. J. Frodsham a Sulphur and White-breasted Toucan (*Ramphastos vitellinus*). Other interesting presentations include a Timneh Parrot (*Psittacus erithacus timneh*), and a Yellow-fronted Parrot (*Amazona ochrocephala*).

Three Ruby-crested Humming-birds (*Chrysolampis mosquitos*) ; two Stripe-breasted Star-throats (*Helimaster squamosus*) ; a Lazuli Bunting (*Passerina amoena*) ; a White Stork (*Ciconia ciconia*) ; a Golden Eagle (*Aquila chrysaetus*), and a young Cassowary believed to be Salvadori's (*Casuarius bicarunculatus tricarunculatus*) have been purchased. Capt. Knight's famous Golden Eagle, "Mr. Ramshaw," has been deposited, and a Purple-capped Lory (*Domicella domicella*) and two Violet-necked Lories (*Eos variegata*) have been received in exchange.

A Schlegel's or Blue-headed Dove (*Calopelia puella*) ; a Silver Gull (*Larus novae-hollandiae*) ; twelve Red-crested Pochards ; a Chilean Teal × Carolina ; two Grey Lag ; one Egyptian, and one



Upland Goose have been bred, together with a number of the more common pheasants.

The Lesser Black-backed and the Herring Gulls are considered by some ornithologists to be colour phases of the same bird, so two chicks of this "cross" bred here in the Southern Aviary are being ringed and it will be interesting to see their adult coloration.

The mother of last year's King Penguin chick has laid again and the Snowy Owls have eight eggs. The female Alpine Chough laid one egg and then died as a result of an egg broken in the oviduct; the eggs of the Common or Cornish Choughs were again infertile, as were those of the Rheas.

A Gang-gang Cockatoo has died, from senility, after being in the collection for twenty-six years; a Bengal Red-vented Bulbul after fifteen years; and a Purple-headed Glossy Starling after twelve years. These longevity records are interesting, but it is not often that one knows the age of a bird at the time of its arrival.

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## XI INTERNATIONAL ORNITHOLOGICAL CONGRESS

The 11th International Ornithological Congress, presided over by Sir Landsborough Thomson, London, will be held in Basel (Switzerland) from 29th May to 5th June, 1954.

During the week of the Congress, five days will be devoted to meetings and two to excursions. Before and after the Congress (25th-28th May and 7th-19th June) excursions will be arranged to enable members to become acquainted with the Swiss avifauna, especially of the Alps and Lower Alps. The Congress fee is 30 Swiss francs.

The prospectus, containing registration form and detailed information, will be distributed this summer. Applications to attend, and to contribute scientific papers, should be sent in before 28th February, 1954, and addressed to: XI International Ornithological Congress, Zoological Garden, Basel, Switzerland, which is at disposal for any inquiries needed.

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## BRITISH AVICULTURISTS' CLUB

Meetings and dinners during the 1953-4 session have been arranged for the following dates :—

9th September, 1953  
11th November, 1953  
13th January, 1954  
10th March, 1954

ARTHUR A. PRESTWICH,  
*Hon. Secretary.*

\* \* \*

## NEWS AND VIEWS

In the combined Coronation and Queen's Birthday Honours' List Peter Scott was appointed C.B.E. Three members of the staff of the Zoological Society of London, well known to many of our members, were also honoured : M.B.E.—G. B. Stratton, Librarian ; B.E.M.—W. Lawrence, Prosectorium, and E. Tanner, Overseer, Birds.

\* \* \*

C. af Enehjelm now writes : " On 18th May I had a young Black-crested Finch (*Lophospingus pusillus*) out of the nest in my private bird-room. I have one nest of seven *Forpus passerinus* (four have already left the nest) and one nest of two (one out). The parents of the latter are my original cock and a grand-daughter."

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D. W. Bowles, Director-Secretary, Royal Zoological Society of Scotland, reports of the Penguins at the Zoological Park, Edinburgh, during 1952 : " In addition to the five King Penguin and two Maccaroni chicks reared, one of the Ringed species was also successfully reared and is now in its adult plumage. It is believed to be the first time that this species has been successfully bred in captivity anywhere."

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Dr. Alan Lendon writes that he now expects to arrive in England by air about 10th August. Part of his letter makes melancholy reading. Owing to the fact that his leisure is constantly shrinking he has found it necessary to dispose of the major portion of his superb collection of parrots and parrakeets, and the Doctor very much doubts that he will be able to indulge in aviculture to anything like the same extent in the future. This is certainly a sad thought after such a long session of bird-keeping on the grand scale.



About 100 members and friends accepted the invitation of Mr. and Mrs. Ezra to visit Foxwarren Park on 30th May, 1953. The morning was showery, but the weather was fine and bright during the afternoon and visitors were able to tour the grounds and aviaries in comfort. Due to the late season the rhododendrons and azaleas were in full bloom—a truly magnificent sight. The President's Garden Party is, of course, the principal event in the Society's year and is eagerly looked forward to by members: once more they are indebted for a very pleasant afternoon spent in perfect surroundings.

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The indefatigable Wilfred Frost brought home yet another collection early in June. Inclement weather throughout the Far East precluded trapping by any of the usual methods: the collection, in the main, being made up by already captured birds purchased from the natives.

Included were 5 Cassowaries, 8 Crowned Pigeons, 16 Nutmeg Pigeons, 3 Plicated Hornbills, 1 Small Grey Ceylon Hornbill; Mynahs, 2 Nias Island, 2 Sunda Island, 2 Bali; 1 Green-billed Cuckoo, 1 Large-billed Blue-winged Pitta, 5 Golden-crowned Bulbuls; Lories, 6 Purple-capped, 4 Black-capped, 4 Black, 4 Ceram, 2 Red, 2 Black-winged; Lorikeets, 5 Forsten's, 5 Ornate, 3 Violet-necked; Parrakeets, 4 Ceylon Blossom-headed, 2 Layard's, 1 Moustache.

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The Hon. Treasurer recommends members living abroad to pay their subscriptions by money order. It is, however, *most* important to notify him of such payments. In many cases the name of remitter does not appear on the money order, with the result that there is usually a number of "unidentified" orders in hand. It thus sometimes happens that a request for payment of subscription is sent to a member who has already paid by this method but omitted to notify the Hon. Treasurer at the time.

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#### WATERFOWL RINGING SCHEME—DETAILS OF RECOVERIES

<i>Date ringed.</i>	<i>Species.</i>	<i>Ringed by.</i>	<i>Date recovered.</i>	<i>Place where recovered.</i>
7.8.1950	Gadwall	Peter Scott	2.2.1953	Frisian coast, near the enclosing dam.

A. A. P.

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## REVIEWS

RECORDS OF PARROTS BRED IN CAPTIVITY. By ARTHUR A. PRESTWICH. London, 1950-1952. Price 35s.

The series of six parts which have been published during the last two years have now been brought together into one volume. The value of these breeding records has already been stressed in the reviews of the various parts, and the whole volume is a publication with which no aviculturist should be without. The book, presented in a practical and useful form, is printed on one side of the paper only, making the addition of personal notes an easy matter. In his acknowledgments of the help he has received from various sources, in particular that of Miss Kay Bonner, Mr. Prestwich concludes by saying "I am conscious of extensive gaps in the records of some of the more popular species. I know perfectly well that there are sources of information I have been unable to tap and that there have been many unrecorded successes of which I know nothing. I hope this present work will open up these sources so that the results may be embodied in a seventh part—of additions and omissions—now in preparation."

It is to be hoped that all who read these pages will assist Mr. Prestwich by sending in any as yet unpublished information they may have or be able to obtain.

P. B-S.

RARE AND EXTINCT BIRDS OF BRITAIN. By RALPH WHITLOCK. Phoenix House, Ltd., London. 21s.

Despite its title this book deals with a large majority of the birds on the British list. In many cases, where no stretch of imagination could label a species as either rare or extinct, its Continental or Irish race is considered to qualify for inclusion. The author very properly points out that sub-species can seldom be identified in the field, but his separate treatment of them may well mislead the novice. The author acknowledges his debt to various authorities, and in the reviewer's opinion the results might have been happier had he followed them more closely. Many of the author's opinions are worthy of consideration, but two at least, that the Greater Spotted Cuckoo is "a smallish bird about the size of Skylark", and that in the Rock Pigeon (*Columba livia*) we have "a species of very similar requirements" to the Fulmar, are ridiculous if intended seriously and most inappropriate in such a book if they are meant to be funny.

The book is illustrated with excellent photographs, many of which have appeared in other publications.

D. G.



THE MANDARIN DUCK. By CHRISTOPHER SAVAGE. Messrs. Adam and Charles Black. London, 1952. Price 25s. net.

That most beautiful of ducks, the Mandarin, has always proved of great attraction and interest to aviculturists and Christopher Savage's monograph on this species should make a wide appeal. Mr. Savage has taken infinite pains to amass a large amount of information about the Mandarin Duck and to this he has added his personal observations and studies of the bird in the wild state in Britain. The opening chapter deals with the history and characteristics of the bird and the author then continues with an informative account of the Mandarin Duck in literature and art. In the chapter "The Home of the Mandarin Duck" he discusses its distribution with great care and marshalls all the available facts regarding the range of this species, quoting extensively from that great authority on asiatic fauna and flora, A. C. Sowerby.

Though originally escapes from collections of waterfowl, the Mandarins have for many years been living in an entirely wild state in parts of Surrey and Berkshire, where, the author points out, the country has all the essentials of their natural habitat in the Far East. Here Mr. Savage has been able to make a close and extensive study of the birds as is evidenced in his chapters on their autumn and winter haunts and habits in Britain, spring display, and nesting, and the brood. Mr. Savage devotes one chapter to discussing the resemblances and differences in appearance, behaviour, and character of the Mandarin and Carolina and gives his opinion that the Mandarin is the most highly developed of all the duck tribe.

In his concluding chapter on the Mandarin Duck in Britain the author refers to the notable collections in which these birds have been bred and been kept in large numbers, such as those of the Duke of Bedford, Mr. Ezra, Messrs. McLean and Wormald, and Lord Grey of Fallodon. He mentions that the earliest imported was probably by Sir Matthew Decker, Bt., about the middle of the eighteenth century, and that in 1834 two were acquired by the London Zoo, since when they have been kept there almost continuously, and have bred fifty-one times. An appendix gives a detailed description of the breeding and eclipse plumage of the adult male, winter and summer plumage of the adult female, and down of the nestling.

The book is excellently presented with a large number of first-class half-tone illustrations, a coloured frontispiece by Peter Scott, and numerous convincing black and white drawings by the author. Two good maps are included, one showing the distribution (so far as can be determined) of the Mandarin in the Far East, and the other showing the breeding colonies, records of winter visitors, and isolated records of the Mandarin in Great Britain, together with the places



where collections of waterfowl are, or have been, sources of free-flying Mandarin Duck.

It is a pity that in a book on which so much care and thought has been expended the Selected Bibliography should contain two mistakes in the German title of Dr. Lorenz's paper on the behaviour of the Anatinae, and that the journal quoted for W. de W. Miller's paper should be a travesty of its proper title.

P. B-S.

A WANDERER IN THE WIND—THE ODYSSEY OF AN ANIMAL COLLECTOR. By CECIL S. WEBB. Hutchinson's, London, 1953. Price 21s. net.

Mr. Webb has had a most adventurous life and to those who have not been so fortunate in this respect he makes it possible at least to share these adventures for so graphically written is his book that the reader is held enthralled for close on 300 pages. Mr. Webb has visited all the continents of the world and his vivid descriptions of travels in South Africa, Portuguese East Africa, Indo-China, Madagascar, British Guiana, Kenya, Tanganyika, Australia, French Cameroons, India, Gold Coast, Ecuador, and the British Cameroons are an education in themselves. As Dr. Geoffrey Ververs writes in the foreword: "His book is packed with solid facts and achievements and contains many new and original observations on the habits and physiology of animals. But do not imagine for a moment that it is a book for zoologists only—it is a book which the general reader will find intensely interesting and instructive."

Mr. Webb is famous as a naturalist and collector of animals but in addition to a vast amount of information on natural history and methods of catching, transporting, and the care of animals, he includes in his book a great deal of fascinating description of natives' customs, witch doctors, superstitions, and local tradition. Mr. Webb writes in a lively and humorous style and all through the book the modesty of his own achievements is evident. He possesses all the qualities needed for those who travel in wild places and have to deal with animals, patience, good humour, initiative, and a quick brain—it is typical of him that when he was being charged by a mad cow, without a moment's hesitation he decided to charge the cow!

Mr. Webb's book is of special interest to aviculturists, and he emphasizes the important part aviculturists can play in the study of bird life, but he has no use for anyone who does not take proper care of captive birds and writes: "If the keeping of birds is undertaken it should be done at the highest level of efficiency or not at all." Mr. Webb's knowledge of birds of all kinds is quite amazing and much can be learnt from his book.



The book is illustrated with no less than fifty-nine excellent photographs and ten line-drawings.

P. B-S.

**BIRDS OF MEXICO.** By EMMET REID BLAKE, Associate Curator of Birds at the Chicago Natural History Museum. With numerous line-drawings by Douglas E. Tibbitts, Staff Artist at the same institution. 644 pages. Chicago : University of Chicago Press, 1952. \$6.00.

For a very long time have we aviculturists felt a dire need for a practical guide to Mexican birds. While there have been published now and then books on this very pertinent subject, they have always been more or less fragmentary, purposely so.

Now comes Curator Blake and gives us almost exactly what we have been wishing for so very long. His comprehensive work is largely meant as a guide to identification of birds in the field. As such it may readily be carried in one's coat pocket, for the 644 pages are very compactly printed on not very heavy paper.

Aviculturists have, of course, known for a good many years that our neighbour Mexico boasts of many hundreds of species of birds which they have never seen in the flesh, and few of them in illustration. According to the author, no fewer than *a thousand species* of birds representing eighty-nine families have been located in Mexico; and if subspecies are included in the counting, then the number of birds totals *nearly two thousand*. Surely such wealth of bird-life is found in but few countries, whatever their size and location. Highly favourable climatic conditions are very conducive to the well-being of birds in Mexico.

Author Blake writes concerning each of the 967 species in a concise, informative style that is readily understandable. He begins each account with a terse description of the bird, gives its distribution, and concludes with remarks regarding females, related species, or whatever else is needful to complete the data gathered. No information is given concerning the food requirements of the birds, their nesting, and other habits, no doubt because the book is meant solely for purposes of identification in the field.

The line-drawings are well done as a whole, usually portraying only that particular portion or aspect of the bird likely to be typical and therefore especially useful for quick and sure identification.

All in all, Author Blake is to be highly commended for the painstaking and resultful research which has given us this worthy addition to the literature of Mexican ornithology. *Birds of Mexico* is without question one of the most comprehensive and dependable guides on the subject yet published.

CARL NAETHER.



THE CARE AND TRAINING OF HOME CAGE BIRDS. By BERNARD POE. Illustrated. 120 pages, 1953. New York City : G. P. Putnam's Sons. \$2.50.

One of Putnam's nature field books, this very handy little volume is meant to aid the amateur birdkeeper in maintaining his feathered charges in good health for many years. To this end the author, a zoology professor, has made it his business to touch—rather lightly and often neither expertly nor completely—on varied phases of bird-keeping. There are sections giving advice on how to buy a bird, how to keep it healthy, how to sex it, how to feed it, how to train it, etc. While the advice is for the most part sound, it is frequently very fragmentary and therefore not a reliable or comprehensive guide to cage-bird keeping. Some of the "facts" given in the book are obsolete, as, for instance, the reference to Bird Haven, which firm many years ago discontinued selling birds. There is a helpful though incomplete bibliography. There are some line-drawings which help the beginner to identify certain species. However, their number is very small.

It is quite obvious that any bird enthusiast using this book will, if he delves into the subject at all thoroughly, very soon find himself in need of a more comprehensive, detailed, and complete guide to keeping cage birds. Mr. Poe's work is quite uneven in the treatment of various subjects, as well as incomplete.

CARL NAETHER.

THE BIOLOGY OF BIRDS. By HARRY W. HANN, Assistant Professor of Zoology, University of Michigan, 1953. 153 pages. Illustrated. Ann Arbor, Michigan : Ulrich's Book Store. \$2.50.

This is a very concise volume into which have been compressed highly informative, relevant, and factual data concerning every essential phase of a bird's life and activity. Written in non-technical language, apparently the outgrowth of a course in ornithology conducted by the author at the University of Michigan, this readable book is worth the time and effort of every serious bird student, for it provides him with factual, up-to-date information, the sort of which he is not likely to obtain in such convenient and concise form in the average so-called bird book, especially the popular one.

The author opens his treatise with a chapter devoted to the morphology and physiology of birds, which in turn is followed by other chapters dealing with bird flight, migration (homing), breeding, anting, longevity, banding, distribution, conservation, and other relevant aspects of the subject. Each one is treated very compactly and quite thoroughly. Frequent references to authentic sources of information are given in the text, and there are more detailed ones in an excellent bibliography. A number of illustrations enhance



the value of *The Biology of Birds*—a very helpful and at the same time readable piece of writing, which deserves to have a permanent place on the serious bird fancier's bookshelf.

CARL NAETHER.

\* \* \*

## NOTES

### BREEDING OF CINNAMON-BREASTED ROCK BUNTING (*Fringillaria tahapisi tahapisi*)

Allen Silver (page 113) records the breeding of this Bunting in captivity in South Africa.

The Society's Medal was awarded to Major M. S. Aldham, of Bodmin, Cornwall, for his success in breeding this species in 1937. The breeder gives a full account in *Avicultural Magazine*, 1937, 311. One young one was reared in the first nest, four in the second, and eggs were laid but not incubated in a third.

A. A. P.

\* \* \*

## CORRESPONDENCE

### THE PROBLEM OF THIRD BROODS OF PARRAKEETS

With reference to Mr. Boosey's criticism of my methods for preventing third nests of Turquoisines, I have never myself known a healthy hen, properly fed, neglect the feeding of her well-grown brood simply because the cock had been taken away.

With regard to the risk of young birds damaging themselves seriously when being caught up, I have also not found this to be great if, as should always be done, a proper supply of leafy branches has been laid on, or tied to, the dangerous areas of wire netting in the flight *before* the brood has flown. Young birds do not crash very hard against wire netting unless there is an unimpeded view through it.

CROWHOLT, WOBURN,  
BLETCHLEY, BUCKS.

BEDFORD.

### BREEDING OF GREY PARROTS IN INDIA

With reference to my letter in the May-June number of the Magazine, Sir Godfrey Davis has written to me to say that my recollection of the conversation I had with him some years ago about the Grey Parrots breeding in India is wrong.

He says that it was not a secondhand account, and that he told me that he had actually seen the birds himself.

E. BOOSEY.

BRAMBLETYE, KESTON,  
KENT.

### HYBRID SONNERAT'S JUNGLE FOWL

Mr. Johnson's interesting article on the hybrids between the Grey or Sonnerat's Jungle Fowl and domestic bantams reminds me of having seen this year, in the Zoological Gardens of Cologne, some birds of this cross.

The females bore a slight resemblance to hen Sonnerat's, but the males showed no trace of Sonnerat parentage except for the voice, which was exactly that of *Gallus sonnerati*, and it was this distinctive call that drew my attention to the birds.

It would be interesting to know to what extent the call is hereditary and whether it is the same in Sonnerat's × Domestic as in Domestic × Sonnerat's; also whether there is any sign of the eclipse plumage on the neck, characteristic of male Sonnerat's.

ZOOLOGICAL SOCIETY OF LONDON,  
REGENT'S PARK, LONDON, N.W. 1.

J. J. YEALLAND.



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### NEW MEMBERS

The twenty-two Candidates for Election, proposed in the May-June, 1953, number  
of the AVICULTURAL MAGAZINE, were duly elected members of the Society.

### READMITTED

- J. H. ARNOLD, 20262 Canyon Hgy. 18, Anaheim, Calif., U.S.A.  
A. W. ROBISON, 125 Maiden Lane, San Francisco, Calif., U.S.A.

### AMENDED NAME AND ADDRESS

- K. W. DOLTON, Sundown, Oakleigh Avenue, Hallow, Worcester.

### CHANGES OF ADDRESS

- C. S. GULBENKIAN, to "Kent House," Great Titchfield Street, Oxford Circus,  
London, W. 1.  
LADY POLTIMORE, to Benwell, P.O. Box 6, Bindura, Southern Rhodesia.  
Dr. BEN J. SVOBODA, to 1400 E. Olive Street, Compton 1, Calif., U.S.A.  
F. L. TUMA, to Limhamnsvagen 12 A, Malmö, Sweden.



## MEMBERS' ADVERTISEMENTS

*The charge for Members' advertisements is ONE PENNY PER WORD. Payment must accompany the advertisement, which must be sent on or before the 15th of the month to A. A. PRESTWICH, 61 CHASE ROAD, OAKWOOD, N. 14. All members of the Society are entitled to use this column, but the Council reserves the right to refuse any advertisements they consider unsuitable.*

### WANTED

Rock Pebbler, male ; Stanley, male.—G. A. GJESSING, "Woodberry Hill," Konnerud, Drammen, Norway.

### WATERFOWL RINGS

Members are reminded that the Society's special blue rings are always available. All Waterfowl in collections, both public and private, should carry them.

Size.		Price per dozen, post free.	
		s.	d.
2-3	Teal . . . . .	2	3
3	Wigeon . . . . .	2	6
4	Mallard, Pintail, etc. . . . .	2	9
4-5	Smaller geese . . . . .	3	6
5	Greylag . . . . .	4	0

Requests for rings should be addressed to the Hon. Secretary, Avicultural Society, c/o Zoological Society of London, Regent's Park, London, N.W. 1, from whom all particulars can be obtained.

### POST-MORTEM EXAMINATIONS

Attention is drawn to the following rules :—

Rule 1.—A short account of the illness should accompany the specimen. All birds to be sent as fresh as possible to Mr. W. Lawrence, The Zoological Society of London, Regent's Park, London, N.W. 1.

Rule 2.—A fee of 10s. and a stamped addressed envelope **MUST** be enclosed with the bird.

Rule 3.—No body or skin of any bird will be returned under any circumstances whatever.

ARTHUR A. PRESTWICH,  
*Hon. Secretary.*



# AVICULTURAL MAGAZINE



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# THE AVICULTURAL SOCIETY

Founded 1894

**President : A. Ezra, Esq., O.B.E.**

**Hon. Secretary and Treasurer : A. A. Prestwich, 61 Chase Road,  
Oakwood, London, N. 14.**

**Assistant Secretary : Miss Kay Bonner.**

Membership Subscription is £1 per annum, due on 1st January each year, and payable in advance. Life Membership £15. Subscriptions, Changes of Address, Names of Candidates for Membership, etc., should be sent to the Hon. Secretary.

## THE AVICULTURAL SOCIETY OF AMERICA

**President : M. Jean Delacour.**

**Secretary-Treasurer : Ivo Lazzeroni, 5034 Templeton Street, Los Angeles 32,  
California, U.S.A.**

The annual dues of the Society are \$3.50 per year (foreign dues \$3.75 or £1 7s.), payable in advance. The Society year begins 1st January, but new members may be admitted at any time. Correspondence regarding membership, etc., should be directed to the Secretary-Treasurer. Members of the Avicultural Society may become members of the Avicultural Society of America on payment of \$1.00 per year.

## THE AVICULTURAL MAGAZINE

The Magazine is published bi-monthly, and sent free to all members of the Avicultural Society and Avicultural Society of America. Members joining at any time during the year are entitled to the back numbers for the current year on the payment of subscription. All matter for publication in the Magazine should be addressed to :—

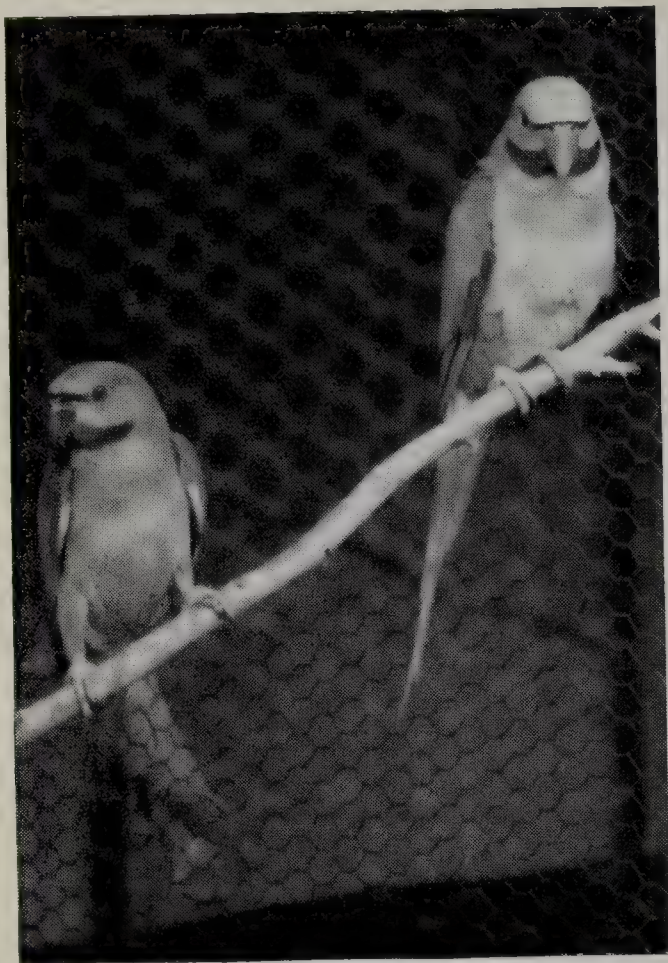
**The Editor : Miss Phyllis Barclay-Smith, 51 Warwick Avenue, London,  
W. 9. Telephone : Cunningham 3006.**

The price of the Magazine to non-members is 5s., post free, per copy, or £1 10s. for the year. Orders for the Magazine, extra copies and back numbers (from 1917) should be sent to the publishers, Stephen Austin & Sons, Ltd., 1 Fore Street, Hertford, England. Telephone : Hertford 2546-9.

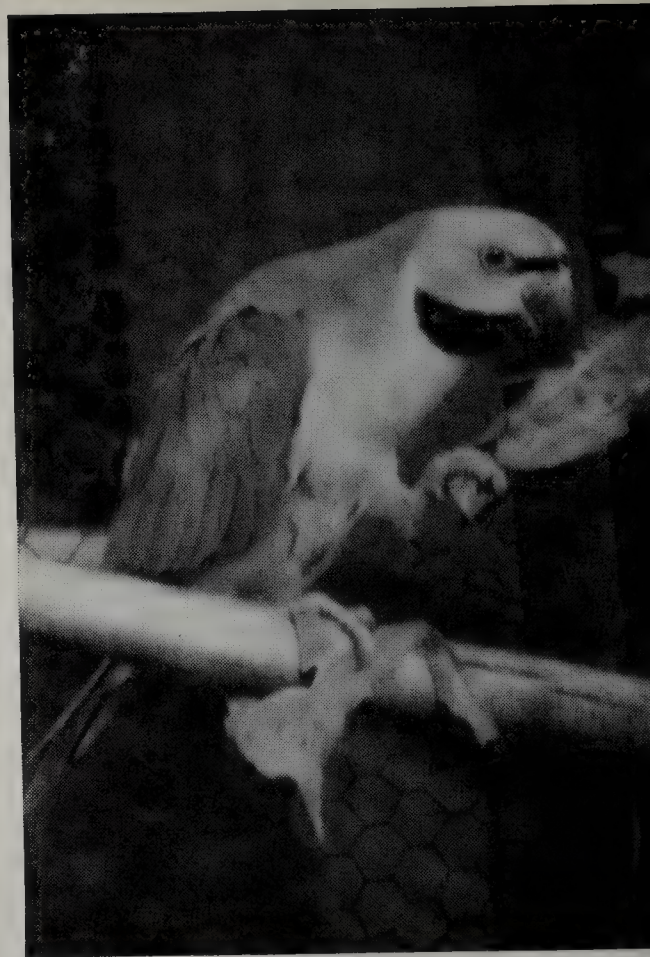




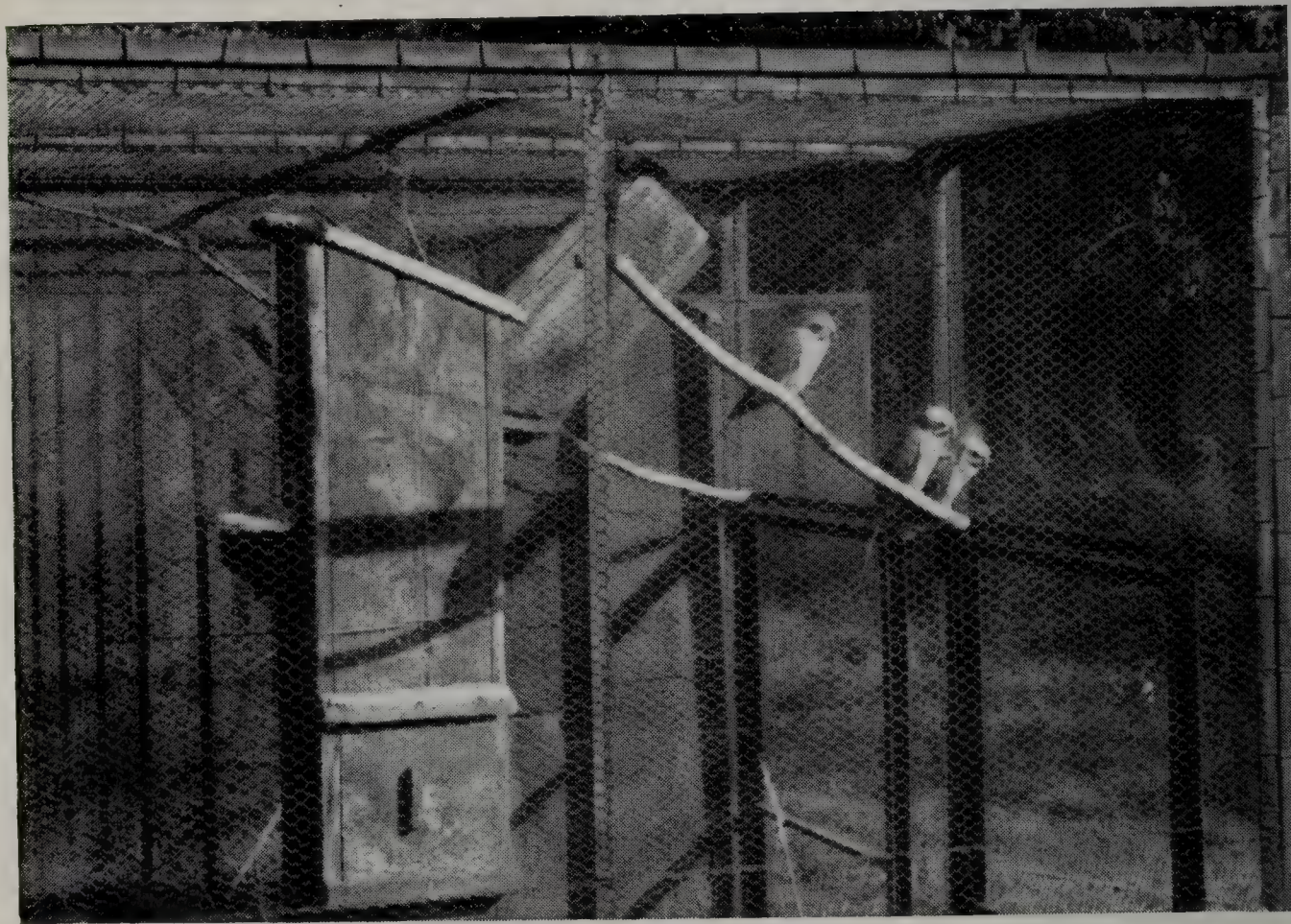




JUVENILE AND ADULT COCK  
MOUSTACHE PARRAKEETS.



HEN MOUSTACHE PARRAKEET  
(feeding on spinach leaf).



AVIARY WITH COCK, HEN, and JUVENILE MOUSTACHE PARRAKEETS,  
SHOWING NEST-BOX.



# AVICULTURAL MAGAZINE

THE JOURNAL OF THE AVICULTURAL SOCIETY  
AND THE AVICULTURAL SOCIETY OF AMERICA

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## BREEDING OF THE MOUSTACHE PARRAKEET

(*Psittacula alexandri fasciata*)

By E. N. T. VANE (Ballinger, Bucks, England)

Generally speaking the Asiatic parrakeets are not as popular with aviculturists as their Australian counterparts. They compare favourably in colour, shape, and plumage, indeed they excel in the latter, but they have the disadvantage of being more difficult to sex on the whole, until the third moult, not so ready to go to nest, and possibly somewhat noisier.

To all these features there are exceptions, some Australians are never easy to sex at any age, some can hold their own in vocal power with almost any living thing on earth, and there are still several yet to be persuaded to breed in captivity. On the other hand some Asiatics are readily sexed at a year old, some breed without difficulty, and some are reasonably quiet in their behaviour. The Moustache is one of the most attractive birds I have ever kept. Most people probably think of these birds as the miserable little half-dead creatures that were at one time freely imported under most unfavourable conditions. Poor little wretches caught raiding the crops and only saved from immediate execution because some half-witted European was prepared to pay money for the thieving little pests. These were nearly all immature youngsters of the year of an almost uniform green colour with an absurd caricature of a handlebar moustache, which name has been appended to them as a permanent reminder of their infirmity. During the relaxation of the parrot ban comparatively few of these birds were brought over, and they were evidently not a paying proposition to the dealer, adults seemed to travel well considering all things, but young birds died easily.

The appearance of a fully adult pair is really magnificent. One dealer advertised them as "miniature Derbyans" and evoked many caustic comments from certain people who were indignant that such a



comparison could even be suggested, but it is in fact quite a justifiable one. In view of the inaccuracy of some descriptions given in the past I give a fairly full one of each sex here. These are taken carefully from living specimens so that allowances must be made for individual variations, as I can only refer to my own pair and a very few other specimens I have been able to inspect. In the cock, the head above the moustachial streak right over the crown is a lovely lavender grey. There is a black streak from eye to eye along the lores, and over the nostrils also the characteristic black moustache. The eye has a very light grey iris which at times appears to be quite yellow. The upper mandible is red and the lower black. The chest is a pinkish lilac merging into a pale green belly and abdomen. The nape is an intense bright green, the remainder of the mantle, back, and wings being green with a golden yellowish-green patch on the wing. The tail is green, the central feathers being blue on top and the underside of the tail being yellowish. The feet are grey.

In the hen the head above the moustache is a pale bluish grey, much more pale blue than the cock. The iris of the eye is again yellowish-grey and appears to vary with the light. Mandibles are both black and she has the same moustachial and eye to eye streaks of black as the male. The chest is pink and noticeably curls up behind the black moustache towards the top of the head. Nape bright green. Mantle, back, and wings green, abdomen pale bluish-green. There is a faint suggestion of a lighter wing patch but not so pronounced as in the cock. In size the birds are slightly smaller than the common Ring-neck, but are not nearly so powerful in flight as the wings are noticeably shorter and their flight recalls that of a lorikeet.

The young bird is an almost uniform green except for the moustache and eye streaks, the area between these streaks being grey. There is no visible wing patch, but the primaries are edged with light yellow which appears to fade, possibly by attrition. On leaving the nest the mandibles were both paler red than the cock's upper one, but both soon darkened and became completely black in a few weeks.

My birds were imported in 1952 shortly after the ban was lifted ; during that year they were housed in an aviary of modest size and went to nest, the hen laid eggs and sat, but there was no result owing to the fact that they were interfered with and she deserted. It was not surprising, therefore, that when the opportunity to acquire a pair of birds that had already shown their willingness to breed was offered to me, I eagerly took advantage of it. As they had been kept indoors for part of the winter I turned them into an indoor flight of only about 8 feet in length, where there was no heat. The hen was a perfect shrew where the cock was concerned, he was not allowed on the same perch and whatever perch he chose that was the perch on which she wanted to be. All the time they were indoors they were



remarkably silent, scarcely ever making any noise or uttering any call-notes ; even when swearing at her partner, the hen only ordered him off by shoving him with her head and opening her beak at him.

Early in the year, during a mild spell of weather, they were turned out into an aviary 15 feet long, 3 feet wide, and 6 feet high, constructed entirely of steel and facing south. The only shelter was of asbestos sheet 3 feet square and with its floor 4 feet above ground-level. It was one of a block of eight flights and their only neighbours were a pair of Bourkes, whom they entirely ignored throughout the season. Their flight was at the end of the block, which enabled me to have one or two very surreptitious inspections during the course of events. By sliding back an inspection trap with a long stick whilst the hen was feeding I was able to see the first egg, the young shortly after hatching, and once or twice whilst growing. The nest box was an old campaigner, a grandfather clock box of thick timber which would cost an impossible sum to-day and would most probably have infringed the timber control regulations then in force. It was filled from ground level for about 2 feet with earth and topped with some 9 inches of damp peat mould, so that there was a drop inside of some 2 feet from the entrance hole, negotiated by the usual wire netting ladder.

The food supplied consisted of sunflower, oats, canary, buckwheat, millet, and hemp. They always selected the sunflower first, though they were very partial to apples and pears, and were supplied also with brown bread rusked up and fed crumbly moist. As I have frequently mentioned previously, all my parrakeets have this addition to their diet ; almost without exception they relish it immensely, and the great advantage I find is that through this medium they can be persuaded to take all kinds of extras such as mineral salts, wheat germ oil, cod liver oil, or any other tonic it is desired to administer, without the use of force. Green food consisted of chickweed, *poa annua*, dandelion seed, leaf spinach, and later on sow thistle, all supplied liberally and varied according to season. They also had access to old mortar grit and cuttle bone. After breeding operations had been completed successfully, we found that the hen was a most engaging personality with human beings. She will come right up and accept titbits from one's fingers, indeed she will soon remind one that she expects something every time she sees one coming. She is very fond of green peas, apple, pear, or banana, but she will not allow the cock to share these delicacies and as he is more stand-offish it is difficult to give a fair distribution to them because she takes one piece from one's fingers and whilst one is fixing another on the wire for the cock and youngster, she consumes her own with indecent haste and then purloins the other pieces before one can get far enough away to give the others a chance.



Almost as soon as they were released into this flight a change in attitude to each other was noticeable. The hen became quite tolerant and the cock began to assert himself. For the first time too it became apparent that they had quite powerful voices and a talent for mimicry, as they can imitate the calls of the Noble Macaws which are the most frequently heard in great volume well enough to make one wonder which bird is creating a disturbance. In the middle of March the cock was always displaying, and whilst doing so he is a magnificent bird. He stands on the perch beside the hen, draws his head backwards and upwards and keeps bowing to her whilst uttering a song which can hardly be called a warble, indeed it can hardly be called a song. But it is perfectly obvious to anyone what he is saying, that is anyone but the hen; she is so bored that she nearly dozes off in the early days, though not for long, and they quite evidently are thoroughly happy in each other's company.

From the frequency and length of endurance of copulation, I should say that it was a triumph of achievement on the part of "X" (the evil spirit of aviculture created by the Duke of Bedford), to succeed in arranging that two out of the three eggs laid were infertile. However, that was the result. The hen was first observed to use the box on 23rd March. In early April she began to stay in the box for quite lengthy periods and the first egg was laid on the 4th, some time in the evening I believe. From then on she was left very much on her own, and it was not until the 17th that another chance to look in was presented, when she had three eggs. Incubation appeared to start with the first egg, as from the 4th onwards she spent all her time in the box, although it is impossible to say whether she was generating sufficient heat to start incubation. She was very suspicious of one's actions at this time, and if she heard anyone about whilst feeding she immediately dashed back into the box. Just after sunset on the 3rd May a youngster was definitely heard being fed, which puts the period of incubation at approximately twenty-eight days. She brooded the youngster pretty closely, which was just as well seeing that it was a single bird, but it appeared to thrive without incident. The progress appeared to be slow, as with other *Psittacula*, but the young one could usually be heard making a lusty noise when being fed. At twenty-five days old it was still downy and without any proper feathers, and had large black eyes. On the 17th June it was seen at the nest hole looking out, but it was still frightfully shy and withdrew immediately it saw anything move. On the 20th it came out on the platform to be fed whilst it thought it was unobserved, and it could then be seen that the bill was a pale red. It finally flew on the 23rd June, fifty-one days after hatching. It roosted out under cover the first night but the hen went back into the box and I thought she might go to nest again. The cock also appeared to take this view,



but she soon disillusioned us both on this point and relations between the pair soon degenerated by degrees back to the old hen-pecked days. During the whole of the incubation period I did not see the cock enter the nest, he looked in and called the hen off to feed or be fed, but that was all. Neither does he feed the young bird, although he may do so, because I have only very seldom seen either parent actually pumping food into the youngster, and on each occasion I have done so it has been the hen, and as soon as they realized they were being watched they have broken off immediately.

About ten days after leaving the nest, it was noticed that the young bird's bill was darkening and it was almost entirely black in a month. The cock was seen to feed the hen occasionally, but he was never given an opportunity to mate although he seemed to wish to do so. From the behaviour of the parents I am inclined to think the young bird is a cock ; the hen always feeds it, and if the youngster worries the cock for food he promptly drives it away although there is no spite in his action such as one finds in the Broadtails.

We now have a happy family of Moustache or Banded Parrakeets, albeit a small one. The hen is delightfully tame, the cock does not count for much, and the youngster is a lovely little bird. It is most amusing to watch him try and take a particular tit-bit from one of his parents ; they both drive him off, but nothing daunts him and he never fails to secure at least a part of the feast. It is sincerely to be hoped that it will be possible to establish these delightful birds in English aviaries as there are quite a few still about.

Although this appears to be a first breeding, it can only be because there has never been sufficient effort to breed them previously. There was nothing very difficult in the whole process and I am sure plenty of others can repeat the performance. If anyone wants to know my secret for success I am not averse to telling them how it may be done. It is just like the young man who started out in business on his own with ten pounds, and recently retired worth a hundred thousand pounds. He attributed his success in life to hard work and diligence, perseverance and determination in the face of many difficulties and the death of a rich uncle who left him £99,990. My rich uncle was getting the right pair of birds and then giving them the benefit of all my care, attention, and experience. Anyone else can do the same.

\* \* \*

As described above E. N. T. Vane has bred a Moustache, or Banded Parrakeet (*Psittacula alexandri fasciata*). It is believed that this may be a first success.

Any member or reader knowing of a previous breeding of this species in Great Britain or Northern Ireland is requested to communicate at once with the Hon. Secretary.



## BIRDS, PLANTS, TREES AND FLOWERS IN THE ROTTERDAM ZOO "BLIJDORP"

By F. J. APPELMAN (Rotterdam, Holland)

Until a few years ago the splendid hothouse adjoining the big Riviera-Hall in the Rotterdam Zoo, contained plants only. However splendid the collection of tropical and subtropical plants was, only a comparatively small part of "Blijdorp's" visitors showed much interest, and most of them "did" the hothouse in a few minutes.

Then the Director had an idea: "Why exhibit plants and flowers without birds, and why exhibit birds without plants and flowers? Those gems of Nature, magnificent flowers and beautiful birds, belong together, and to do them both justice they should be exhibited together!"

So a number of smaller and bigger aviaries were built amongst the orchids, palms, ferns, and many other plants, and when possible the aviaries themselves were also planted with plants and flowers, the colours of which were carefully chosen to blend with the colours of the birds.

The success was overwhelming; after the birds were taken into their new surroundings, the hothouse, formerly only visited by few people, was always crowded with visitors, who proved they appreciated this splendid combination of exotic birds amidst exotic plants which up till then had been rarely seen. And how did the birds do? We can only say: extremely well!

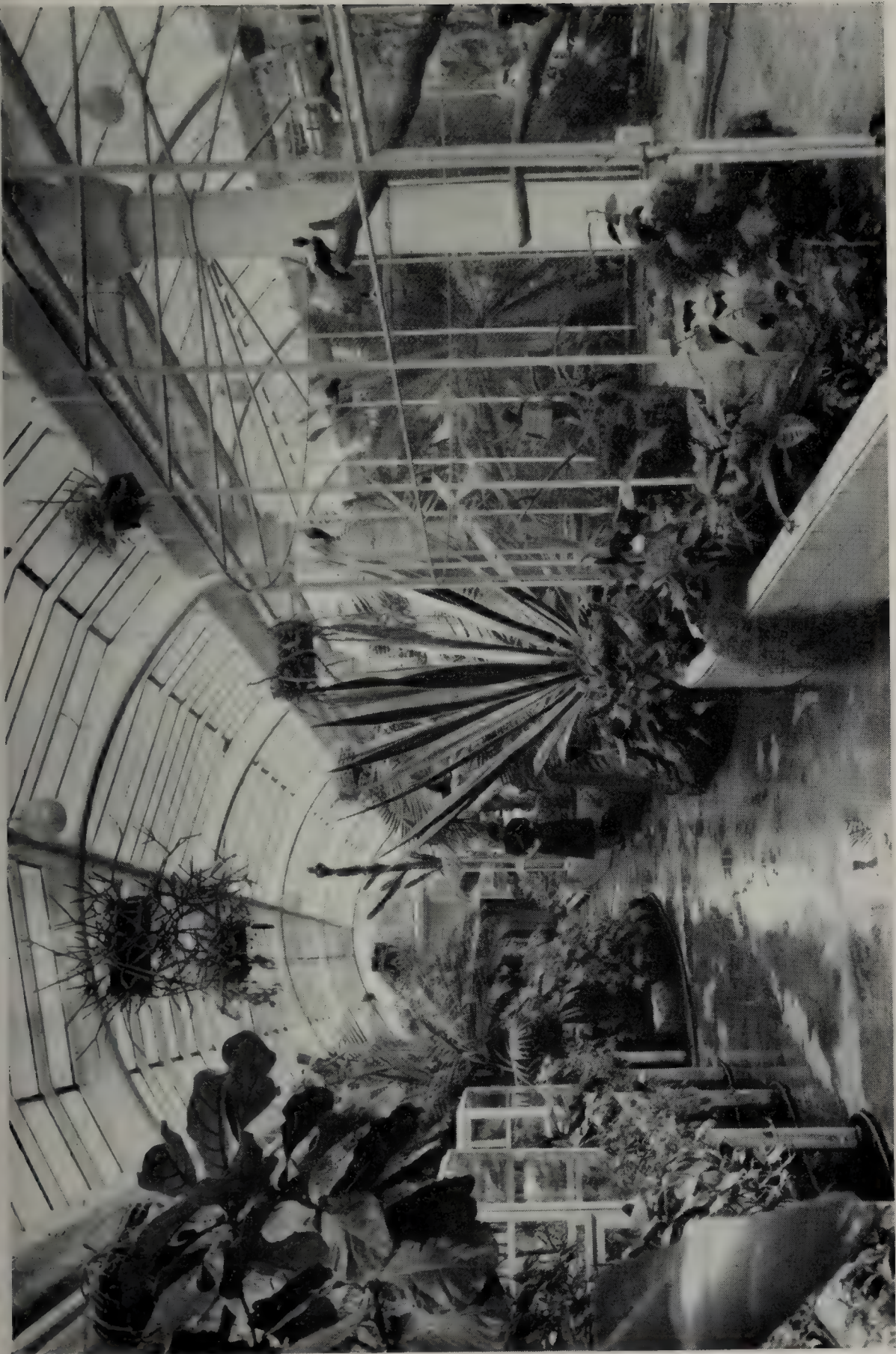
It is pointed out that before the new arrangement, it had already been observed that tropical birds moult much easier, faster, and better in hot and humid surroundings than in colder and drier places. Never were our Macaws finer in spring than after wintering in the hothouse. Moreover, we installed combined self-registering thermometer-hygrometers, and made sure that we arranged in the hothouse the same, or about the same, climatic conditions that prevail in the rain-forests in the tropics.

To check the hothouse "climate" we have the average daily temperature and moisture curves of certain places in Indonesia on the registration-strip and try to keep our hothouse-curves as closely as possible to this curve.

It is our opinion that a little difference in the temperature and humidity does not matter so much, but that the course of the curves is most essential. Therefore we are content if the course of our hothouse-curves runs more or less parallel and not too far away from the standard-curves (see illustration).\* Amongst the birds successfully

\* It should be understood that for our control we use the average daily temperature- and moisture-curve that prevails during the year; so we do not take in account the different seasons (monsoons).





HOTHOUSE WITH LARGE AND SMALLER AVIARIES.  
Large Aviary contains Red Birds of Paradise.

*Copyright*

[Rotterdam Zoo "Blijdorp"  
[To face p. 156.





LARGE AVIARY CONTAINING HERONS AND TREE DUCK IN HOTHOUSE.



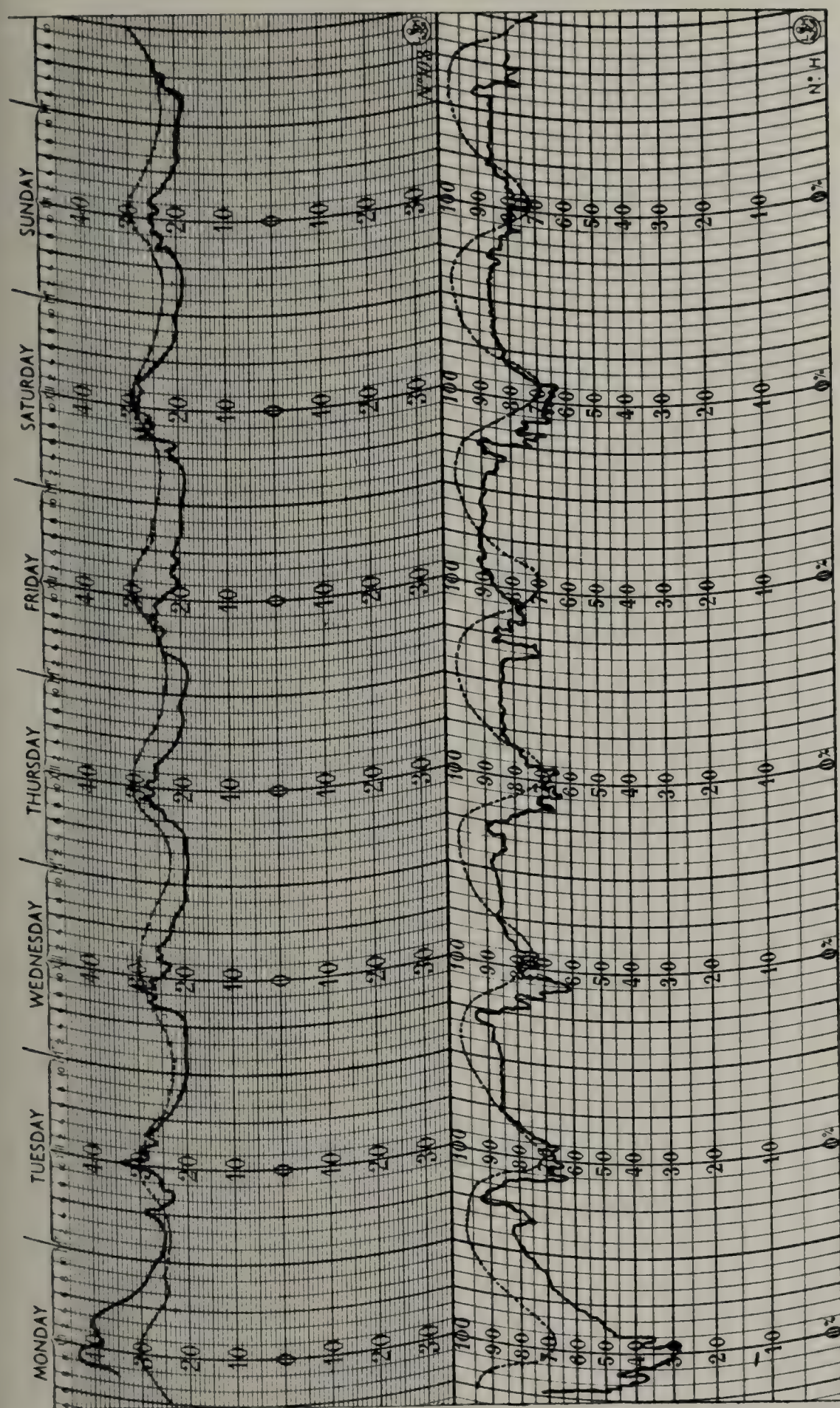
LARGE AVIARY CONTAINING OCELLATED TURKEYS, RADJAH SHELD-  
DUCK, BRAZILIAN TEAL, AND CAYENNE RAIL IN HOTHOUSE.

*Copyright]*

*To face p. 157.]*

*[Rotterdam Zoo "Blijdorp"]*





GRAPHS OF HEAT AND MOISTURE CONTROL IN THE VICTORIA REGIA HALL IN "BLIJDORP"

Above : Temperature. Below : Moisture. Drawn Line : Curves obtained in the Hothouse.  
Dotted Line : Average Daily Curves of Takengon (Sumatra).



kept in this way are : Ibises, Birds of Paradise (six species), Jacanas, Nicobar Pigeons, Gouras, Ocellated Turkeys, Radjah Sheld-Duck, Brazilian Teal, Toucans, Tanagers, and many smaller birds.

Of course, at this moment we cannot say that we have solved the problem entirely, as our experiment has only been in operation for one and a half years. All we can say is that until now we have suffered only minor losses, and that the birds are doing extremely well. They are in fine condition and very lively, loudly calling and signalling to each other. Some even started breeding, e.g. the Crowned Wood-partridge (*Rollulus roulroul*), from Sumatra, known as a bird that is not too easy to keep in captivity.

It should be understood, however, that this way of keeping and showing birds is rather expensive. It is, of course, hardly possible to keep parrakeets in this way, as they will ruin all plants in a few hours. But even small seed-eating birds do a lot of harm to the plants.

Best fitted to live in harmony with flowers are insect-eating birds and, to a certain degree, fruit-eating birds, but even these soil flowers and leaves with their droppings, so that the planting of the aviaries has to be changed at least every two weeks or even more often. This necessitates keeping in stock a large number of plants, shrubs, and trees, which also means a lot of work for the gardeners !

But in any event we are sure that our idea : "Show your animals in beautiful surroundings ; keep birds and flowers together" is highly appreciated by the visitors, and cannot fail to teach the public the sense of beauty, harmony, and love for Nature's inexhaustible treasures, which is one of the first aims and duties of a modern Zoo.

\* \* \*



## THE BREEDING OF GREEN INDIAN RINGNECKED PARRAKEETS

By THE DUKE OF BEDFORD (Woburn, Bucks, England)

“ Nothing very remarkable about that,” I can hear you say. “ Lots of people have bred them ” ! That, however, Reader, is just where you are mistaken for no one, not even Dame Nature herself, has bred this particular *kind* of Green Ringneck !

Sexing immature Ringnecks by their appearance is always a bit difficult, for although hens show slightly more yellow in the iris of the eye than cocks, the difference is not very great, and the more closely you examine a lot of young birds the more confused are you likely to become. It came about, therefore, that what I had for some time believed to be a pair of two-year-old blue Ringnecks turned out to be two cocks, judging by their behaviour as the breeding season approached. As I already had a certain hen, this left me with a spare cock and I decided, if possible, to mate him to a lutino in the hope of breeding something which might even be split for white. By rather unusual good fortune I did get hold of a lutino hen which was said to have bred—quite a good bird, save that the ends of some of her toes were missing, doubtless because her owner had not taken the precaution to avoid exposing her feet to severe frost.

When I introduced the two birds to one another, although the blue cock had shown signs of being in breeding condition, their attitude of surprise and alarm was not exactly promising. As on a previous occasion when I had put a blue and a lutino Ringneck together, the reaction of each bird seemed to be “ Good heavens ! I never saw such an extraordinary-looking object ! ” As, however, they did not seem disposed actually to fight, I decided to leave them together and see what happened. After a while the blue cock showed some desire to make advances to the hen, but for a time he met with a very chilly reception. When he walked up to her in the consequential manner which is part of a Ringneck’s display, she simply ignored him, gazing into the distance as though he did not exist. Only if he actually touched her and offered to feed her did she open her beak at him in an ill-natured way. In the past she had doubtless had a mature green or lutino husband with a well-developed ring and the ringless, two-year-old “ Little Boy Blue ” seemed to her a most inferior substitute. Some time later I noticed the blue cock examining the nest-box, but as the hen’s attitude towards him remained chilly and distant, it was with some surprise that one morning, finding no sign of her, either in the aviary shelter or in the flight, I realized that she must be in the nest itself. After that things began to look more promising, and in due course it became apparent that the lutino was sitting. Some



weeks later I saw the cock emerging from the box—an almost certain sign that the young had hatched. How is it, I wonder, that parrakeet fathers are made aware so quickly of the birth of their children when the latter are still so tiny and feeble that they can hardly make any audible noise? Do their wives manage to tell them and, if so, how is it done? I remember some time ago reading a charming account of observations made at the nest of a pair of breeding partridges, which included a description of the way in which the hen drew her mate's attention to the arrival of their first-born child, with the result that he became so wild with excitement and delight and cut such capers that he could not even see where he was going and ran into a tree! Thereafter things progressed in an uneventful and satisfactory manner in the Ringneck family. Judging by the amount of food consumed, however, the brood was not a large one, and in due course when two nice young ones left the nest, this proved to be the case. As I rather expected, they are green, but I imagine, if they are sex-linked, that both cocks and hens are split for blue and the young cocks, if mated to blues, might even produce some albino daughters.

\* \* \*

## BREEDING RESULTS FOR 1953 IN CALIFORNIA

By DAVID M. WEST (Montebello, California, U.S.A.)

The current breeding season has had its high and low points. Certainly there were times when one wondered about "birds inhumanity to man" for some pairs only tantalized us with expectations.

Our famed (unusual) California weather stayed with us the entire season. From January to March it was summer—with day after day of sunshine and clear skies. It turned out that this was our mildest winter in many years and also one of the driest, as we had very little rain. As a result many birds came into fine breeding condition by March, when dull grey skies and cool damp weather became the order of the day. This seemed to cause indecision in our feathered friends, leaving them wondering whether they should nest, moult, or drop dead. In the end they did just that—some moulted in March, some nested, and some just gave up and died.

The failures and sad news department we'll cover first. Stanley Rosellas, always my favourite Rosella, proved again a disappointment. Though I have had Stanleys for twelve years, I have never been very successful with them. The season started with three pairs, and the hen to one of the pairs gave up, forever, the idea of increasing California's Stanley population, for she was found dead one morning for no apparent cause. The other two hens immediately started to



make up for her demise by starting large families. One hen laid eight eggs and the other hen laid a clutch of nine. After this strenuous effort one hen sat very half-heartedly for about ten days, and then deserted, and the other hen never did decide to incubate, though I will say, in her defence, she faithfully checked her eggs daily and would sit on them for a half hour or so each day. It was most unfortunate that we had nothing to transfer the eggs to—and so the result was a large nothing for the Stanleys. Better luck next year?

Crimson-wings, always rare in California, were very tiresome. A young male disapproved of his mate and luckily we were able to provide another one that he immediately accepted. Though she looked in the nest and even sat in the nest for a few days, nothing eventuated. As he was just a two-year-old cock this was rather to be expected. This pair took great interest in the matrimonial affairs of all the other birds, even to looking in the nest of a pair of Silver Zebras housed with them. As the Zebras did not seem to object, it made little difference, and the Zebras just kept right on raising large families carefully supervised by the Crimson-wings. A second pair of Crimson-wings scrapped all fall and winter, but became very friendly during April. With none of the usual nest-box inspection you find in the Rosellas, she laid two eggs quite suddenly, and then never visited the nest again. I placed the eggs under some Cockatiels who successfully hatched the one fertile egg, but would not feed the chick. We hand-fed it for ten days and then found the youngster dead one morning for no apparent reason. Quite to our surprise the female laid again (two eggs) and though she sat faithfully the eggs were clear. The San Diego Zoo is quite successful with this species.

Red Lories visited the nest-box and mated, but nothing further eventuated. The female is probably too young, for she was in juvenile plumage when obtained. This pair were raised in Arizona by Mr. Sheffler. These Lories are always particularly annoyed when the lawns are mowed. They very noisily object, hanging by the wire and scolding. This pair are permanently frustrated by their futile attempts to kill a neighbouring pair of Pileated—whom they especially seem to resent.

A pair of Black-winged Lories also mated, but no nest was provided for them as the hen was in a very bad moult and we rather wondered if raising a family would help her tacky appearance. The Black-wings are certainly much more quiet than the Red Lories. This pair also is from Arizona.

Turquoisines had three clutches of clear eggs. This is a surprise as they are in a large portable aviary and are a handsome three-year-old pair. Turquoisines have the unhappy habit of being very scrappy—a fault the other *Neophema* happily lack.

Brown's Rosellas showed great interest, but this pair were intro-



duced very late and they fell into an early moult. This pair fortunately seem well-disposed towards each other—which has not been the case with most of the Brown's Rosellas here in California.

A male Stanley mated to a female Blue Rosella did not even display to her, and both birds seemed quite contented just to sit the season out.

Blue-bonnets laid and sat very well, but all six eggs were clear. Of the four pairs, only one laid, and the other three pairs just visited the box and looked interested. A male Manycolour mated to a female Blue-bonnet did nothing and was found dead one morning with a broken neck.

Blue India Ringnecks proved interesting. Although I should have known better, I had rather expected this mutation to be a cobalt blue. I was tremendously surprised to find they are an unusually lovely light blue—what we here in California call a "sky-blue" or "powder blue". The sex of the first two birds posed an interesting problem, and one that was difficult to solve, since they were very nervous, and upon seeing anyone watching them would immediately retreat into their shelter—not to reappear for some time. Finally, during March, they did some displaying, and when a nest-box was hung their actions left no doubt they were a pair. The nest-box was removed after we were sure of their sex, for they began a very heavy moult which lasted an unusually long time. They eat a tremendous amount of fruit daily, and each day a large apple and orange are given, and by the following morning nothing is left. They also proved tremendously fond of the young buds and flower buds of fruit trees of plum, peach, and apricot, and as they grew more confiding would fly down (while we watched) to their daily branch of peach and apricot. They made a very fine display as they crawled about among the pink and white blossoms. For Ringnecks they are quiet—at least in comparison to some I had years ago.

A second pair of blue Ringnecks were an obvious pair from the first and were always confiding and steady. They are all very fond of ripe corn (on the cob) and will easily eat an ear a day.

It might be interesting to note that prior to 1950 there were no lutino Ringnecks in the United States. However, in that year a zoo imported a small breeding nucleus of eight lutino and lutino-bred Ringnecks for study. These have prospered and as a result some lutino Ringnecks are being raised every year. Even so they are still very scarce in this country and are still too rarely seen.

Many California breeders have told me quite definitely that, in their experience, the young male Ringnecks will obtain their ring at from sixteen to eighteen months. This is not the case with European birds, judging from the printed references.

Barraband's did nothing, though they always looked like they intended to raise a family. Both pairs displayed, fed, and mated,



and looked into their nest-boxes, but eventually did nothing. They are great favourites of mine, and their friendly and comical ways are a joy.

Yellow Rosellas also looked at their box but got no further. They are surprisingly tame and friendly, and ever ready to fly to the wire for a piece of grass or a nut. One male appears to have sore feet and the ankles seem to be swollen. Does anyone have suggestions on what should be done to help this bird?

On the sunny side of the account the really outstanding numerical success of the season was 16 young Bourkes from three breeding pairs. The first pair deserted two fertile clutches of eggs and then started a third clutch. When the third clutch also was deserted (why, I don't know) I was able to save the fertile eggs, and these were given to a spinster Nyasa Lovebird who raised one young Bourke for about three weeks when the Bourke was removed and hand-fed. A second pair showed no signs of nesting until very late in the season, when the hen suddenly retreated to her nest-box and reared a fine brood of four. The third pair really did themselves proud, and from three nests they reared eleven (5, 4, 2) without any trouble or fuss. They actually would have started a fourth clutch if the nest-box had not been removed. This pair was in a large cage with the pair of Barraband's and the male Bourke never hesitated to do battle with the Barraband's who always obligingly retreated before his determined attacks! These battles were always short, and the Bourkes made no objection to the Barraband's sitting on top of their nest-box. I was especially interested to note that the Bourkes would eat the (cracked) sunflower seed that the wasteful Barraband's would drop in the sunflower bowl. This doubtless helped the young Bourkes to be the really fine specimens they are.

Manycolours were successful again this year. One pair raised seven (4, 3) in two nests, while a second pair, composed of a fine male and a very nervous hen, did not fare so well. Their first nest of four fertile eggs was given to a very trustworthy Redrump hen, who duly hatched them and let them all die! A second nest of three youngsters was deserted—and though they were hand-fed they never prospered, and died one by one. A third pair did not nest.

A very lovely pair of Pileated (with a long five year record of failures and desertions) hatched a single youngster which was successfully hand-raised. It is a very tame and confiding bird—as most hand-raised Pileated are. A second pair of Pileated were too young to nest, although the year-old cock did display and call to the hen.

All the African Lovebirds did well. Peachface, Fischer's, Nyasas, Black and Blue Masked, all raised good numbers of fine youngsters. Of especial interest were the lutino Nyasas. These are really extremely beautiful with their golden bodies and pink heads. We had



a single lutino male and one (purported) split cock to start the season. These two males were placed with three known young females early in the season. The split (?) cock raised five young (3, 2), and the lutino male and his mate raised seven (1, 6). All the twelve young were greens, but they have been carefully segregated and some of them at least must be splits, so it does give us some good stock for next year. The second nest of six the male lutino had, was considered too large, and so the extra hen Nyasa was given two of his fertile eggs and duly reared them. This spinster situation was interesting because at various times both males entered her nest, but none of the many eggs she laid proved fertile. Nyasas are very fond of greens and ours also eat large quantities of apples and oranges, along with soaked bread while rearing young. At the time of these notes (July) both pairs of the Nyasas again have eggs, so the total number of young for the season is still uncertain. I have not observed the cock helping to build the nest—the female doing all the work by carrying the nesting material in her beak. I put in a fresh palm frond each week for them—and this has proven most satisfactory for nesting material.

Scarlet-chested did very poorly. Of four pairs one was too young, one had two sets of clear eggs, one pair raised two, and the other three. Rather disappointing as they are usually very dependable.

Princess Alexandras also did very poorly. We started the season with five pairs, but one of the females died early in the season and we could not replace her. Of the remaining four pairs, one pair did not nest at all; one pair reared a single but very fine only child; one pair had four fertile eggs that failed to pip and a second nest of clear eggs; and the fourth pair reared two very fine youngsters. The father of the two youngsters just mentioned is a blue sport, and is one of the loveliest birds I have ever seen. The pink throat and tail in the normal bird are replaced with white, while the body is blue-grey and the wings the loveliest sky-blue. This is a very fine large male, very vigorous and tame. Last year he was mated to a good hen, and though they were actually observed to mate, she did not nest. This year he mated to a proven hen who immediately laid five eggs. Of the five one was clear, two failed to pip, and two were hatched and raised. These two youngsters are normally coloured, but are split for the blue factor. The two young are thought to be a pair.

Cockatiels did exceptionally well, five pairs raising over fifty youngsters without any trouble. A few (seven) lutino Budgies were raised from an albino cock and a female lutino.

For many years I have been an increasingly strong advocate of feeding fruit to all the birds we keep. In addition to the various standard grains (hemp, oats, sunflower, millet, canary) mixed in varying proportions depending upon the season and the bird, I



find that every bird we have seems to look forward to the daily fruit ration.

A most satisfactory and economical method of providing fruit is this method which we have evolved over a period of time. Since most of the smaller birds will only eat a quarter of an apple and orange a day, I cut the fruit into quarters (first being sure to wash the fruit carefully to remove any sprays, etc., growers might have used), and then impale the fruit on a nail in the aviary. This holds the fruit firmly in place and prevents it from being dropped on the floor and being wasted. It is easiest to impale the fruit if you drive the nail in upside down—so that the fruit does not have to pass over the head of the nail. In short—instead of driving the nail from the top of the wood downwards, place the nail so that the point of the nail comes up through the wood, thus giving you a sharp point. This will hold the fruit firmly in place and makes it easy for the birds to eat.

For each cage I drive four nails. Because some pairs fight over food, I drive them in sets of two, placing the two sets a few feet apart. This prevents squabbles—also when the pair has young, more fruit may be desirable, and the added nails make it easy to provide the additional fruit. We have found that when the fruit is cut into quarters the birds find it easier to eat than if it were halved.

The large birds as Kings, Barraband's, and the like, all get one-half of an orange and one-half of an apple each day. The smaller *Neophema*, *Agapornis*, *Psephotus* will do nicely with the quarters.

During the entire year I feed apples and oranges as part of the daily feeding routine. During the summer all the birds receive fresh corn on the cob. With corn it is very important to start out gradually with only small sections of the cob for this precaution will avoid any possible bowel upsets. I have seen such small birds as the finches and the Budgies work very diligently on the corn in order to get the kernels. Summer brings figs and most birds enjoy the figs which I secure from our tree when they are very ripe. The lorries will eat the melons as cantaloupe, water melon, and most of the seed-eating birds will like the seeds from cantaloupe, etc., when dried. All the psittacine birds love with a wild passion pomegranates. In the fall these are readily obtainable at very reasonable prices, and I split these open, and the birds will fly all about one when this treat is brought to their aviary. As the tree bears profusely here in California, one could easily grow one's own supply. The one drawback with this fruit is that it is very likely to stain the bird's plumage—and so in no time at all your Barrabands have a reddish breast and some might object to this fruit for that reason.

So many people say to me that they tried fruit and the birds didn't touch it. This is doubtless true—the *Agapornis* will sometimes take a month before they will start to eat the fruit and Bourkes



and Budgies even longer. I just continue to give it *until* they start to utilize the fruit.

A second complaint one frequently hears is that only a small portion is eaten. One should consider the small capacity a pair of Elegants or Bourkes will have. For example, in one aviary this season there were five Nyasas, and they would just barely finish their daily ration of a quarter of an apple and orange. It is quite true that they "wasted" some by not eating all of the apple and orange—but the important thing is not that they did not eat all of it, but instead that their diet was enriched by the addition of apple and orange. Anyone who keeps birds has a duty to see to it that they are kept under the most desirable conditions possible—and possibly the addition of fruit will enrich their life.

At any rate I firmly believe that the aviculturist's chances of rearing young are greatly increased when the pair has had access to fruit during the year. I believe that the use of fruit results in better plumage and healthier adult birds and youngsters—end of sermon !

Greens are a problem too. Branches of trees such as the fruit trees, apricots, peaches, plum, and elm are always appreciated, but it would take a small forest to do this very frequently. I have found that a most satisfactory shrub is the pyracantha, a member of the cotoneaster family. Besides being a mass of bloom in the spring, the red berries are lovely during the fall and winter. Best of all is the fact that all the birds will eat the berries at any time during the year. Here in California the native birds are so fond of them that it is a task to keep enough of them for your aviary birds.

Another green that is very satisfactory is chard. The stalks are relished by all the birds, and it now comes in a very nice cherry red colour, so the plant is not unsightly. When the plants bolt to seed, the birds are very fond of the seeds when still green. This plant is easily grown and quite long lasting.

Bread. Although the staff of life for man, many here consider it of doubtful value for birds. Personally I feel that it is a very good weekly addition to the diet—and a necessity when parents are with young. I use a dark whole-wheat bread which has first been dried in the sun. Over this I pour water (some use milk) and give to the birds with families. It must be a great help to the parents, for they are always there waiting for it when there is a hungry family under hand.

If one is not satisfied with bakery bread it would be a relatively easy task to bake one's own bread using some of the specially prepared health flours now on the market. At least a few people I have talked to are doing this very thing and are quite satisfied with the results.



## BREEDING PARROTLET HYBRIDS

By J. DALBORG-JOHANSEN (Odense, Denmark)

In July, 1948, I got a lovely pair of Green-rumped Parrotlets (*Forpus passerinus passerinus*) from Holland. I put them into a small indoor aviary in my birdroom, together with Parrot Finches (Red-headed and Three-coloured) and some Waxbills. They went to nest immediately and reared three youngsters, and after this the Green-rumped bred regularly every year, with two or three broods.

In 1949 I got a pair of Blue-rumped (*Forpus passerinus flavissimus*), but unfortunately they turned out to be two males. I had them for a year and constantly tried to find females, but it was impossible to get any. Then I—in spite of disliking parrot hybrids—mated each of them to a Green-rumped hen. Both pairs were placed in single cages with a nest-box outside, entrance-hole towards the window. They paired up willingly, and a fortnight later both hens were sitting, each on six eggs. All the eggs were fertile, one hatched five, the other four chicks, and all nine were fledged.

The hybrids were all nice and fully feathered birds, the young hens were exactly like their mothers, and the young cocks were less blue on the rump than their fathers, but after their first moult most of them turned out quite as blue. I, and other aviculturists, have picked them up and looked at them side by side with the old cocks and we could not see any difference between them. It is curious, as the pure Green-rumped cocks are easy to distinguish, with the lack of blue on the rump, less blue on the wings, and they are smaller.

Last year we imported some pure Blue-rumped Parrotlets to this country, but it seems to me that the hens of both pure species and the hybrids are all alike. I have discussed this with Mr. C. af Enehjelm, and he is of the same opinion. I should be very glad to hear if anyone in England can see any difference.

After their first broods the two "mixed" pairs had two and three broods with respectively three and three, and three, two, and four youngsters.

Now this year (1953) both pairs are again rearing families, this time they have big clutches—six and seven young ones, and I have heard from some of the aviculturists, who got young "hybrid" pairs here last year, that they have bred too, and their offspring are just as "blue-rumped" as their parents.

Incubation time for both pure Green-rumped and Green-rumped × Blue-rumped Parrotlets is 21–23 days, the young ones are fledged in about thirty days and can be separated from the parents a fortnight later.

It may interest readers to hear about two other breeding attempts in



my birdroom last year, which unfortunately I can't say were successful. The first was with a pair of Red-faced Lovebirds (*Agapornis pullaria*) that dug a nesthole in an horizontal parrakeet box (completely filled with peatmoss for the purpose) and laid three eggs, which were all fertile, but the young were dead in the shell. It seems to me, that the hen's sitting was not steady enough, she was too often outside the box with the cock, who very seldom went into the nest. But nevertheless, I have not been so near success with this species before.

The other pair, who made an attempt to breed, was a pair of Red-bellied Conures (*Pyrrhura frontalis*). I got them in May, and as I was short of aviaries I placed them in an empty lovebird cage, not more than 60 cm. long, and with a nest-box outside. The birds immediately occupied the nest-box and enlarged the entrance hole with their strong beaks. The birds were very nervous and jumped into the box at the faintest noise in the birdroom, and therefore I saw them very seldom. After a month or so, I thought of transferring them to a better and larger cage, and was indeed very astonished to find the hen sitting. In the nest were four eggs placed on a support of woodshavings. Two of the eggs were hatched, one young one died nearly at once, but the other one lived for three weeks, but was then killed by one of the parents. Perhaps the cause was the too small nest-box in conjunction with their great nervousness.

As usual with our fascinating hobby, we must say, better luck next time.

\* \* \*

## A TUDOR BIRD-CAGE

By A. A. PRESTWICH (Southgate, England)

Our member Martin Luther, the well-known collector of antiques and bygones, has recently unearthed the bird-cage illustrated, and it has now been added to my collection.

The base measures  $17\frac{1}{2}$  inches by 11 inches, and the overall height is 17 inches. The panels on either side of the "balcony" are not glass, as one might expect, but mirrors. Consequently, while inside any bird would have been in very subdued light as, apart from openings in the sides, presumably intended for food and water receptacles, there is no other means of lighting the interior.

Nothing is known of the history of this cage. We assume the period is Tudor, and I would be grateful if any reader could determine the approximate date. I would also like to have suggestions regarding the species most likely to have been kept in it.





A TUDOR BIRD-CAGE.

Copyright]

[A. A. Prestwich

[To face p. 168.





PAIR OF CHESTNUT-FLANKED WHITE ZEBRA FINCHES.

*Copyright]*

*[Alec Brooksbank*

*To face p. 169.]*



## A NEW ZEBRA FINCH AND TWO OTHER RECENT ARRIVALS AT KESTON

By EDWARD BOOSEY (Keston, Kent)

As it seemed to me that there has been quite enough of E. J. Boosey in the magazine of late, I intended to have given this number a miss. However, I recently received such an urgent plea for copy from our Editor, saying she was really worried about the next number, that I felt I must try and concoct an article of some kind.

Incidentally, may I add *my* plea that more of our members would contribute to the Magazine, thereby greatly lightening our Editor's load, as well as increasing the general interest of the Magazine? It may be that some people who only keep the commoner species think that members would not be interested in articles about these. In this, however, I believe they are entirely wrong, for while I think people like reading about rarities, I think many probably like even more reading and mentally comparing notes about birds which they themselves keep.

As I could think of nothing else to write about at the moment, I am giving a short account of a new colour-variety of the Zebra Finch, and also of two other recent arrivals at Keston.

A few weeks ago we received a consignment from Australia consisting of ten pairs of a new colour variety of the Zebra Finch, which were sent over as "Marked White Zebra Finches" which describes them tolerably well, but we have called them Chestnut-flanked White Zebra Finches.

They are quite distinct and most attractive, being pure white with the normal form's black markings dark slate-grey, and the white-spotted chestnut patches on the sides of the breast clearly visible, though much paler; in fact they are rather like a Silver Zebra Finch with the silver areas replaced by white. Quite a good idea of their appearance can be obtained from the accompanying photograph of one of our breeding pairs at Keston.

We sold six pairs, and of the four we retained, one hen died and was replaced by a White to find out which is dominant. The latter are sitting, and, of the three pairs of Chestnut-flanked Whites, one pair is sitting; the second pair have young in the nest; and the third pair have a brood of two just fledged; the third young one having fallen, or been thrown, out of the nest at a tender age.

The newly-fledged young are white with greyish heads, which will presumably fade to white when they come into adult colour. As far as we are aware, these are the first Chestnut-flanked Whites to be bred in this country.

Other new arrivals of interest are about a dozen specimens of the



Javan race (*Munia ferruginosa*) of the much better-known White-headed Mannikin or "Maja Finch" (*Munia maja*).

These are the first of the Javan race we have ever had, and they are prettier as well as rather smaller than their better-known relative. The ordinary White-headed Mannikin is, of course, merely deep chocolate-brown with a whitish head and neck and silvery beak, but the Javan race has a silver-grey head and neck, and its appearance is much enhanced by the fact that it has a large bib on the throat and upper breast, of so deep a brown as to appear almost black, which adds contrast, and makes it considerably the more beautiful bird of the two.

We also recently received two specimens of the Speckled-fronted Weaver (*Sporopipes frontalis*)—again a bird we have never had before—although we have often imported its near relative the Scaly-crowned Weaver (*S. squamifrons*).

In *Aviculture*, Vol. I, we read of the *Sporopipinae*: "This group is composed of two little birds, often kept in captivity, which slightly resemble the Waxbills." They are described as follows:

The Speckled-fronted Weaver (*S. frontalis*): "The forehead and top of the black head are finely dotted with white, as well as the slight moustache. The nape and sides of the neck are cinnamon; the body above ashy brown, the cheeks and underparts pale beige, beak and legs whitish. It is about the same size as an Orange Bishop, only with a longer tail."

The Scaly-crowned Weaver (*S. squamifrons*): "Is considerably smaller than the preceding, which it resembles, the only difference being that the general colour is less tawny, the wing coverts and black-brown tail are bordered with white, the crown and the moustache have white lines instead of dots. The habits are the same. This species is more frequently imported than the other and has nested in captivity."

I should have said myself that *squamifrons* is *far* more often imported than *frontalis*, and that the former has little if any tawny in its plumage, being mainly a white, black, and grey bird.

The better-known of the two, the Scaly-crowned Weaver, is found in the Union of South Africa, while the Speckled-fronted Weaver is a bird of Western and Equatorial Africa, and is found as far north as Timbuctoo in the Sahara Desert country.

Both are lovers of dry conditions, the Scaly-crowned being found particularly in the region of the Kalahari Desert.

Nobody, seeing these birds for the first time, would imagine for one moment that they were Weavers, as their shape and general appearance is entirely finch-like. Yet that they *are* true Weavers is obvious from the fact that they construct a spherical nest typical of the family, woven of fine grasses and with a short pointed tunnel-shaped entrance.



In conclusion, I thought it would be of interest to record some of the things Alan Lendon, over here from Australia, told me when he recently paid a very welcome visit to our farm.

The trouble is that he is such a mine of information on the subject of Australian birds, that it is difficult mentally to digest all he tells one during a visit consisting of a single afternoon and evening, so if any of my facts are not entirely accurate—that must be my excuse.

Apparently—as perhaps one would only expect—we in this country are far behind in the way of colour varieties of Australian birds.

One of the most interesting things he told me was that he had seen a blue Princess of Wales Parrakeet, which has since been sold for a very large sum to an American. I gather that there is a good deal of fawn-colour in the plumage, the greener parts of which are bluish, while the pink areas on the cheeks and throat are whitish. The bird, however, must be very beautiful, as the large light green patches on the wings are replaced by bright sky blue.

Then there are both lutino and cinnamon Rosellas, of which Lendon told me he had only seen the former. These must be very beautiful, retaining, I think I am right in saying, the red areas as is usually the case with the lutino editions of birds that have red in the plumage. I gather that these are not just isolated specimens, but that both lutino and cinnamon Rosellas are being bred in aviaries in Australia.

Then, too, there are yellow Gouldian Finches (quite distinct, of course, from the rare *yellow-headed* bird), as well as white Diamond Doves. The former sound rather attractive, as it appears that they retain, to a certain degree, the red of the head, and also the purple of the upper breast in contrast to their yellow body-colour. The latter may also be attractive, but I personally have never been able to appreciate an all-white edition of any bird that is so beautifully marked as the Diamond Dove.

\* \* \*



## DARENTH-HULME, 1953

By KAY BONNER (Southgate, England)

A few notes on our birds may prove of interest, perhaps more especially to members overseas, as indicative of the psittacines available to English aviculturists.

The main aviaries consist of a range of eighteen houses 4 feet wide, 3 feet deep, with a sloping roof 4 feet high in front and 3 feet at the back, standing on legs, the floor being raised 3 feet from the ground ; attached are 30-foot flights, 6 ft. 6 in. high. The occupants of these aviaries are :—

1. Red-rumped Parrakeets. Only one young one reared this year.
2. Queen Alexandra's Parrakeets. Laid but did not hatch.
3. Stanley Parrakeets.
4. Cockatiels.
5. Diamond Doves, Painted Quail, two pairs of Lineolated Parrakeets. The Diamond Doves reared two young, but did not nest a second time.
6. Pennant's Parrakeets. Four good young ones left the nest early in July during a particularly wet spell of weather. One, unfortunately, apparently struck its head and through lying in wet grass for some hours developed an enteritis. It was taken over to E. N. T. Vane, and he, with his usual diligence, succeeded in hand-rearing it, and it is now quite a nice bird.
7. Abyssinian Lovebirds. Three pairs have toyed with the idea of nesting, but have failed to produce any offspring.
8. Fischer's Lovebirds. A small breeding colony succeeds in maintaining itself, but only just. We did not find this species entirely hardy last winter and there were several losses.
9. Barraband's Parrakeets.
10. Cactus Conures and a single Weddell's Conure ; one of the latter died during the winter.
11. St. Thomas Conures, five.
12. A Barnard's Parrakeet male and an Indian Ringneck female.
13. Golden-mantled Rosellas.
14. A very mixed aviary—a pair of Blossom-headed Parrakeets, young Red-rumped and Pennant's Parrakeets, a Delamere's Whydah, a Junco, Blackbird, Linnet, and small Seed eaters.
15. Barraband's Parrakeets.
16. Crimson-winged Parrakeet male and Pennant's Parrakeet female.
17. Six Red-bellied Conures. One pair succeeded in rearing three young—the first, we believe, since W. Shore-Bailey's first success in 1924.



## 18. A pair of Cissas.

Running along the back of the shelters there is a service passage and wilderness aviary, giving a flight 72 feet long and 10 feet wide. The occupants are three pairs of Purple-headed Glossy Starlings and a pair of Crested Bronze-winged Pigeons. The Starlings have shown not the slightest inclination to breed. The Pigeons, on the other hand, were only too anxious to do so. In spite of continual interference on the part of the Starlings they eventually managed to rear two young.

An escape passage and planted aviary, 7 ft. 6 in. wide, stretches along the front of the flights. The sole tenants of this are, at present, an aged and somewhat decrepit pair of Peach-faced Lovebirds.

An adjoining aviary, 24 feet by 18 feet, contains a colony of about two dozen Red-faced Lovebirds. I would have liked to describe it as a breeding colony, but such is far from being the case. There has been a certain amount of excavation, but not a single egg.

The chalet-type bird-room houses a pair of Vane's 1951 Noble Macaws; two pairs of Golden-winged Parrakeets (*Brotogeris chrysopterus*); a pair of Canary-winged Parrakeets; a pair of Maximilian's Parrots; an Orange-bellied Senegal Parrot (*Poicephalus senegalus versteri*); and half-a-dozen Red-faced Lovebirds, mostly with clipped wings. A house, 10 feet wide by 6 feet, with flight attached, contains a pair of White-bellied Caiques.

We keep a number of pairs of the commoner Pheasants—Golden, Silver, Amherst, Chinese, Reeves'. The nine pens are mostly 22 feet wide by 17 feet, but there is one 22 feet by 42 feet. The shelters are made of wattle hurdles and look quite attractive. Pigeons share most of the enclosures and live in perfect amity with the pheasants, if not with themselves. We have Bronze-winged, Brush Bronze-winged, Triangular-spotted, and, of course, Java and Barbary Doves. All these have bred successfully with the exception of the Triangular-spotted, whose chief delight appears to be fighting. When, having wintered together, two pairs were not separated sufficiently early in the spring a battle-royal ensued during which one was killed and another severely injured. A pair, however, now has two young ones ten days old.

Having suffered depredation by semi-feral cats we had Wolseley Electric Fencing installed round the entire grounds and this has proved a very satisfactory deterrent.

Finally, the house parrots consist of a pair of Greys, three Senegals, a Rüppell's, and a Brown-headed (*Poicephalus cryptoxanthus*).

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## LONDON ZOO NOTES

By JOHN YEALLAND

Of the birds received during the past two months, three are new to the collection. They are a White-breasted Warbling Finch (*Poospiza melanoleuca*) ; a Sunda Islands Myna (*Gracula venerata*), and the Uganda Green-headed Sunbird (*Cyanomitra verticalis viridisplendens*).

The first is an interesting bird with rather the appearance of a tiny Shrike and of an inquisitive disposition. The Myna is of the genus formerly known as *Eulabes* and quite closely related to the familiar Nepal and Southern Hill Mynas. The Sunbird is the eastern form of the Green-headed of tropical West Africa. This specimen was presented, together with five Red-chested Sunbirds (*Nectarinia erythroceria*), by Mr. D. Roberts of the East African Fisheries Research Organization in Uganda. A Kingfisher (*Alcedo atthis ispida*) has also been presented.

A Malayan (or Malaccan) Peacock Pheasant (*Polyplectron malaccensis*) and a Malayan Argus (*Argusianus argus*) have been presented by the Chief Game Warden of Malaya. A Funereal Cockatoo (*Calyptorhynchus funereus*), the first to be exhibited since 1931 ; a pair of the pretty Cuban Blue-headed Pigeons, or Quail-doves (*Starnoenas cyanocephala*), and a Pink-headed or Jambu Fruit Pigeon (*Ptilonopus jambu*) have been received in exchange.

The King Penguin hatched in July continues to thrive ; the 1952 bird is now like the other adults except for being paler orange on the bill, throat, and sides of the head. At the Quarterly General Meeting in July Head Keeper Jones was presented with the Society's bronze medal for his skilful work in the rearing of this Penguin. He is the first Keeper of birds to receive this award.

A second Schlegel's Dove ; two Lesser Black-backed and a Herring Gull ; two Quaker Parrakeets ; three Chukor Partridges ; three Vieillot's Fireback Pheasants ; three Bahama Pintails ; six Carolina and what is believed to be a Chiloe Wigeon  $\times$  Carolina have been bred in the Gardens.

The Snowy Owls hatched one quite strong chick, but it did not long survive. The Gaboon Forest Robin collected in British Cameroon during 1948 by Mr. Webb has laid a further two eggs, so it may be that two is the normal clutch. This bird is fairly common in the Cameroon forest, but practically nothing is known about its nesting.

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## BRITISH AVICULTURISTS' CLUB

The thirty-ninth meeting of the Club was held at the Rembrandt Hotel, Thurloe Place, South Kensington, S.W. 7, on Wednesday, 9th September, following a dinner at 7 p.m.

Chairman : D. Seth-Smith.

Members of the Club : Mrs. J. R. Alderson, Miss P. Barclay-Smith, The Duke of Bedford, Miss K. Bonner, W. Brain, G. T. Clark, Mrs. G. T. Clark, T. R. W. Crewes, T. H. Evans, A. Ezra, J. F. M. Floyd, Miss S. A. Fothergill, J. C. Garratt, Miss D. Gask, T. Goodwin, F. E. B. Johnson, Miss E. M. Knobel, Miss M. H. Knobel-Harman, P. H. Maxwell, H. Murray, S. Murray, K. A. Norris, A. A. Prestwich, J. H. Reay, D. M. Reid-Henry, Professor E. Sprawson, R. A. Taylor, E. N. T. Vane, C. S. Webb.

Guest of the Club : Dr. Alan Lendon.

Guests : Dr. K. W. Awlwin-Gibson, J. Bailey, C. Bates, Mrs. C. Bates, P. Bates, W. J. C. Frost, Miss H. Gentry, Sir Crawford McCullagh, P. Marshall, Mrs. S. Murray, J. A. Norris, Mrs. J. A. Norris, Mrs. J. H. Reay, J. Robinson, Mrs. D. Seth-Smith, Mrs. R. A. Taylor, N. S. Walker, Mrs. C. S. Webb.

Members of the Club, 30 ; guests, 19 ; total, 49.

The Chairman, opening the meeting, said it gave him very great pleasure to welcome Dr. Alan Lendon, already so well known to members on account of his numerous writings in the Magazine ; Sir Crawford McCullagh, from Belfast ; and Mr. and Mrs. Cecil Webb, from Dublin.

Dr. Lendon conveyed greetings on behalf of aviculturists in South Australia, and then gave a very interesting description of present-day aviculture in Australia generally, but more particularly as practised in the South.

The next meeting of the Club is on **11th November, 1953.**

ARTHUR A. PRESTWICH,

*Hon. Secretary.*

\* \* \*

## NEWS AND VIEWS

T. R. Holmes Watkins has had a particularly good breeding season, rearing many Splendid Grass Parrakeets, three Kings, and Queen Alexandra's, Pennant's, and Crimson-winged Parrakeets.

\* \* \*

The Severn Wildfowl Trust Expedition, under the leadership of Peter Scott, has now returned from Iceland. While there more than 9,000 Pink-footed Geese were marked.



Miss P. Barclay-Smith represented the Society at the XIVth International Congress of Zoology, held at Copenhagen, 5th-12th August, 1953. Sir Edward Hallstrom also attended, and while in London showed a series of films at the Zoological Society of London.

\* \* \*

K. A. Norris has bred the Mountain Bluebird (*Sialia corrucooides*), three reared. This is only the second time this species has been bred in Great Britain—the first being the President's success in 1938, when of five young hatched one was reared.

\* \* \*

Dr. Alan Lendon writes : " W. Turner has informed me that A. E. Leer, of Manly Vale, near Sydney, has recently bred four young Ground Parrakeets (*Pezoporus formosus*), and has given two of the young birds to Sir Edward Hallstrom. The latter bred the Red-eared Conure (*Pyrrhura cruentata*) last year."

\* \* \*

In a recent letter E. J. Boosey writes : " A young pair of Pileated Parrakeets have two young in the nest, and our wonderful old breeding pair have four young ones just fledged, which makes altogether nineteen during the four seasons they have been here—6, 3, 6, and 4."

\* \* \*

E. J. Boosey has bred a lutino " Alexandrine " Parrakeet of nearly pure blood, just a small percentage of Ring-neck. Incidentally, a breeder living in Staffordshire, not a member of the Society, claims to have been breeding lutino Alexandrines for the past five years. The Hon. Secretary would be grateful for any confirmatory information.

\* \* \*

Arthur Lamb has bred a hybrid Blue-fronted Amazon  $\times$  Yellow-cheeked Parrot. The latest report from Lamb is that " the young parrot is still alive and doing well. It is now seven weeks old and fully feathered, and quite as large as its mother. It is all green except for a blue forehead ; its cheeks are a lime green, and its body the true Amazon green. I am just wondering how much longer it will stay in the nest ".

\* \* \*

H. Murray reports : " I have had three Green Cardinals fly to-day (5th July). They are only about twelve days old and I would have been happier if they had stayed in the nest for a few more days. This is the second nest that these birds have had this year. The cock killed the young of the first nest at three days old and drove the hen to nest



again. When the hen started to lay the cock died of a stroke, and the hen sat and has reared so far on her own. I realize that the birds are a long way from being reared but it is interesting all the same." Murray has also bred the common Grey Waxbill. He writes: "Only one young bird flew as far as I could see, but it is possible that more came out last Friday (31st July) in the rain and got lost."

A. A. P.

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## CORRESPONDENCE

### COLLECTING THE SCARLET-TUFTED MALACHITE SUNBIRD

It has been pointed out to me that my account of *Nectarinia johnstoni* on Mount Kenya might have given the impression that the few specimens I collected were caught while there were still young ones in the nests.

I should therefore like to explain that at the time when I caught the birds, the nesting was, to the best of my belief, at an end in that particular area, and the fledgelings independent of their parents.

REGINALD BLOOM.

c/o ZOOLOGICAL SOCIETY OF LONDON,  
REGENT'S PARK, N.W. 1.  
11th July, 1953.

### GREEN GLOSSY STARLINGS

I was interested in an article in the March-April Magazine on African Green Glossy Starlings. As I have kept and bred them since 1932, I can confirm that the orange-eyed birds and the yellow-eyed birds are the same—as my original pair both had orange eyes. Of eight that I have reared to maturity, seven have yellow eyes and only one has orange eyes. I found these birds extremely easy to breed, and rear up to the time of leaving the nest, and *extremely hard* to rear to maturity.

Over the years I must have had upward of fifty leave the nest strong and well, and I have only reared eight to maturity. The story is always the same—about a week after leaving the nest the young ones refuse all food. The parents frantically try to feed them, thrusting the food at their beaks, bodies, and even legs. In three or four days all such young are dead. On one occasion I had five magnificent young leave the nest, looking extremely strong, and flying and perching strongly; in three days they were feeding themselves—on white ants, grasshoppers, and mealworms. In a fortnight *all* were dead. In exactly the same manner as all the others. I have always thought that this extremely distressing sequence was due to some food lack. But what it is, I have *no idea*. My Starlings are fed on a good soft mixture with fresh grated hard-boiled egg. They have a good supply of insects, especially when breeding—white ants, mealworms, grasshoppers, crickets, cicades, etc. They only give the young live food. They have access to fruit of several kinds, but I have never seen them eat it. Of course they also have access to grit and calcium.

Once I get them through the first moult they are *extremely* hardy. In fact, I still have my original cock, and he was mature in 1932.

Another curious fact is that I have never lost a young one in the nest—but always about a week after leaving.

I would be very grateful if anyone could suggest what is wrong.

6 BARKER STREET,  
NEWCASTLE,  
N.S.W.,  
AUSTRALIA.

R. E. B. BROWN.



## PARRAKEET EYE DISEASE

Mr. Hastings' account of his experience of diseased eyes in newly-imported insectivorous birds was most interesting. The extraordinary promptitude with which he effected cures by dosing them with cod liver oil well exemplifies the amazing effect of giving adequate doses of Vitamins A and D to vertebrates which have passed through a period of hardship and malnutrition such as I fear newly-imported birds very often have.

With regard to the application of this principle to "parrakeet eye disease" however, the case is somewhat different. Doubtless shortage of Vitamin A in newly-imported stock renders them more susceptible, and I did make this point in a letter to the AVICULTURAL MAGAZINE published in the September-October issue of 1952. I was at first particularly inclined to suspect Vitamin A deficiency, as Xerophthalmia is known to occur in poultry in some parts of Australia—probably due to some local peculiarity in their feeding. I was soon convinced, however, that it is at the most a secondary factor. In the first place—the first bird I treated, a hen Barraband, was given very large doses of Vitamin A when she first came under my care, with some improvement in her general health but none in her eyes. Secondly, all the others received a Vitamin supplement (containing Vitamins A, B-complex, C, and D) in the drinking water, which is a routine measure in my bird room for all newly-imported stock, and all birds kept indoors in winter. Their eyes, nevertheless, only improved when treated with the antibiotics aureomycin and chloromycetin, and relapses occurred if I stopped this treatment too soon.

Xerophthalmia can be rapidly cured by large doses of Vitamin A. It cannot be cured by any other means whatsoever. The birds under my care were *not* improved with the Vitamin A they had, but *were* cured by other means. I think these facts eliminate Xerophthalmia fairly conclusively.

The opportunity of treating more cases is unlikely to arise in future because of the parrot ban, but I am looking after at present two lovely cock Barrabands, one English aviary-bred, which contracted the disease in an aviary by contact with a newly-imported diseased bird. One, the worst case I have ever seen, had a panophthalmitis on arrival; that is, infection of the globe of the eye itself as well as the tissues of the orbit. The eyeball actually burst shortly after I received it, and I expected the bird to die. It did not, however, and seems likely to recover, albeit with one blind eye. The other bird which had gross disease of both eyes is cured. As they came from an aviary, I gave neither any Vitamin supplement, but fed them on seed and green food only.

"Parrakeet eye disease" differs from the ordinary septic conjunctivitis of other birds in its slow and insidious onset, its long duration, and its extreme resistance to treatment. The other odd thing is its restriction to a few species of Australasian Parrakeets. I have only seen or heard of it in Crimson-Wings, Kings, the Polytelines, Bourkes, and the green Grass Parrakeets. Broadtails appear to be immune, and I have never heard of it in the Asiatic, African, or South American parrots.

THE WHITE HOUSE,  
5 PORTSMOUTH ROAD,  
KINGSTON-ON-THAMES.

F. B. LAKE.

## WHITE-BREASTED TOURACO

Mr. de Goederen, in his interesting account of the new Bird House at Wassenaar, says that some White-breasted Touracos were labelled "*Touraco, Gymnoschizorhis personata*".

I visited Wassenaar early in June and Mr. Louwman kindly took me to see the Louise Hall where there was a specimen of *G. personata*—and there is another in Rotterdam Zoological Gardens. The cumbrous common name of this handsome Touraco is the Brown-faced Goaway-bird. Sclater considers that there are three forms of this genus; Peters recognizes only two, *G. personata* of Southern Abyssinia, and *C. p. leopoldi* ranging from Eastern Belgian Congo and Uganda southward to Lake Nyasa.

J. YEALLAND.

ZOOLOGICAL SOCIETY OF LONDON,  
REGENT'S PARK, N.W. 1.



### CANDIDATES FOR ELECTION

- W. J. BOYD, 15 Unity Street, Carrickfergus, Belfast. Proposed by Sir Crawford McCullagh.
- Captain C. N. CLAYDEN, The Middlesex Regt., Inglis Barracks, Mill Hill, N.W. 7. Proposed by F. E. B. Johnson.
- J. O. D'EATH, The Grove, Hadley, Barnet, Herts. Proposed by R. E. Heath.
- Mrs. G. DE BEAUMONT, Blairlogie House, Menstrie, Clackmannanshire, Scotland. Proposed by J. Gray.
- Colonel H. B. FINCH, "Revesby," Hutton Road, Ash Vale, Surrey. Proposed by A. A. Prestwich.
- L. F. GARDENER, 10 New Way, Pinelands, Cape Town, South Africa. Proposed by Miss K. Bonner.
- R. N. GILBERT, 324 Hampton Avenue, Salt Lake City, Utah, U.S.A. Proposed by Boyd Shaffer.
- A. GILLAN, 66 Broomhill Road, Aberdeen, Scotland. Proposed by Miss K. Bonner.
- R. H. GRANTHAM, 13 St. Wilfrids Road, New Barnet, Herts. Proposed by Miss K. Bonner.
- A. V. GRIFFITHS, Bryn Awel, Llandyssul, Cards. Proposed by Miss K. Bonner.
- Corporal M. LEE JONES, 915th Medical Co. Ambulance (Sep), A.P.O. 175, U.S. Army, Europe. Proposed by Miss K. Bonner.
- K. N. MADSEN, Bøgebakken 2A, Frederikssund, Denmark. Proposed by A. A. Prestwich.
- W. M. SANDS, 12 Rothbury Gardens, Adel, Leeds 6. Proposed by Miss K. Bonner.
- K. STEVENS, 45 Britwell Road, Wylde Green, Birmingham. Proposed by Mrs. H. G. Alderson.
- N. S. WALKER, Farthing Green, Farthing Green Lane, Stoke Poges, Bucks. Proposed by Miss D. Gask.
- R. I. WHITE, 786 Geary Street, Apt. 401, San Francisco, Calif., U.S.A. Proposed by A. A. Prestwich.
- Dr. W. WINDECKER, Zoologischer Gartens, Riehler Str 173, Koln, Germany. Proposed by A. A. Prestwich.

### NEW MEMBERS

The eleven Candidates for Election, proposed in the July-August, 1953, number of the AVICULTURAL MAGAZINE, were duly elected members of the Society.

### CHANGES OF ADDRESS

- W. BARKER, to College Road, Stanthorpe, Queensland, Australia.
- Mrs. J. DALZIEL BIRRELL, to Green Corner, Pen Selwood, Nr. Wincanton, Somerset.
- BRIAN BURGIS, to Carroll Crescent, Grange, Brisbane, Queensland, Australia.
- Dr. R. E. EVANS, to 12 Kirklee Terrace, Glasgow, W. 2.
- H. C. EVERETT, to 7932 Old River Road, Forestville, Calif., U.S.A.
- PERCY GLOVER, to Oparaeana Street, Ngongotaha, Rotorua, New Zealand.
- P. SWANEPOEL, to Central Service Station, Warden Street, Harrismith, O.F.S., S. Africa.
- P. W. TEAGUE, to Rowlestone, Teignmouth Road, Dawlish, Devon.
- Major D. WILLIS-FLEMING, to "Helvetie," Plymouth Road, Totnes, Devon.

### CHANGE OF STYLE AND ADDRESS

- Miss M. SÉF, to Mrs. Klaasen-Sée, Papaverstraat 42, Bussum, Holland.



## MEMBERS' ADVERTISEMENTS

*The charge for Members' advertisements is ONE PENNY PER WORD. Payment must accompany the advertisement, which must be sent on or before the 15th of the month to A. A. PRESTWICH, 61 CHASE ROAD, OAKWOOD, N. 14. All members of the Society are entitled to use this column, but the Council reserves the right to refuse any advertisements they consider unsuitable.*

### WANTED

Overseas member wishes to purchase a cock lutino Ring-necked Parrakeet ; must have a rose ring.—Offers to HON. SECRETARY, 61 Chase Road, Oakwood, N. 14.

### FOR SALE

1953 hand-reared Barrow's Golden-eye, Eider, Mandarin, Carolina, and other species ducks.—C. T. DALGETY, Radwell Mill, Baldock, Herts.

### WATERFOWL RINGS

Members are reminded that the Society's special blue rings are always available. All Waterfowl in collections, both public and private, should carry them.

Size.		Price per dozen, post free.	
		s.	d.
2-3	Teal . . . . .	2	3
3	Wigeon . . . . .	2	6
4	Mallard, Pintail, etc. . . . .	2	9
4-5	Smaller geese . . . . .	3	6
5	Greylag . . . . .	4	0

Requests for rings should be addressed to the Hon. Secretary, Avicultural Society, c/o Zoological Society of London, Regent's Park, London, N.W. 1, from whom all particulars can be obtained.

### POST-MORTEM EXAMINATIONS

Attention is drawn to the following rules :—

Rule 1.—A short account of the illness should accompany the specimen. All birds to be sent as fresh as possible to Mr. W. Lawrence, The Zoological Society of London, Regent's Park, London, N.W. 1.

Rule 2.—A fee of 10s. and a stamped addressed envelope **MUST** be enclosed with the bird.

Rule 3.—No body or skin of any bird will be returned under any circumstances whatever.

ARTHUR A. PRESTWICH,  
*Hon. Secretary.*



# AVICULTURAL MAGAZINE



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Founded 1894

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HARTLAUB'S TOURACO.



# AVICULTURAL MAGAZINE

THE JOURNAL OF THE AVICULTURAL SOCIETY  
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## HARTLAUB'S TOURACO

(*Turacus hartlaubi*)

By CECIL S. WEBB (Dublin, Eire)

Hartlaub's Touraco is confined mainly to the Kenya Highlands but extends into Tanganyika Territory on Mt. Kilimanjaro and Mt. Meru. In Kenya its chief haunts are the forested slopes of Mt. Kenya, Mt. Elgon, and the Aberdare Mts. up to 10,000 feet, and it is also not uncommon in the wooded ravines that extend from these mountains into the highland plains. It was in one of the latter that the writer first saw this Touraco in the Aberdare range at an altitude of 8,500 feet. This was in 1933 at which time Hartlaub's Touraco was unknown to aviculture.

This bird is so beautifully portrayed in the accompanying plate that it needs no description but those familiar with the Purple-crested Touraco (*Gallirex porphyriolophus*) will notice a marked resemblance if the white facial markings are excluded.

To capture the atmosphere in which Hartlaub's Touraco lives it is as well to take a glance at the Kenya Highlands, its inhabitants, and climate. Here, on the lower slopes of the Aberdares, the equator is near by; the days are hot but the nights, owing to the high altitude, become very cold, frequently showing white frost by the early morning. The air is dry and invigorating and so the daily extremes in temperature cause little or no discomfort. However, in the rainy season (June and July) when the highlands are shrouded in mist for days on end, it is said to be distinctly gloomy and miserable.

The forested ravines, which descend to a considerable depth below the level of the surrounding country, were brought into being, as was the Great Rift Valley, by a shrinkage in the earth's crust. To descend into one of these from the surrounding grassland is a strange experience, for one is suddenly plunged into a totally different faunal and floral



zone. When I was first there, from early January to the end of April, the highland plains were alive with migrants, the most noticeable being Wheatears and Yellow Wagtails (*Budytes flavus*), there being several distinct races of the latter from widely separated localities but mingled together here on common ground. Male Jackson's Whydahs (*Drepanoplectes jacksoni*) could be seen bobbing up and down in the grass like black balls of fluff doing their nuptial dance, and here and there, where there was a patch of flowering leonotis in an open situation, one might get a glimpse of the exquisite Kenya Malachite Sunbird (*Nectarinia famosa aeneigularis*).

On approaching the ravine more leonotis, near cover, was in evidence and here were seen two gems of the sunbird world—the Golden-winged (*Drepanorhynchus reichenowi*) and the Tacazzé Sunbird (*Nectarinia tacazze*)—both looking indescribably beautiful in the tropical sunlight.

On entering the forest a remarkable drop in temperature was evident and before proceeding very far magnificent specimens of wild olive and podocarpus trees, their branches festooned with masses of long pendant usnea, came into view. A rustle in the branches indicated a troop of Colobus Monkeys (*Colobus polykomos matschiei*) feeding quietly on leaves or berries or even on the usnea with which their long-haired robes harmonized so perfectly. Occasionally one would see a small party of White-headed Wood Hoopoes (*Phæniculus bollei jacksoni*) busily probing in crevices in the bark for insects, and more rarely a Narina Trogon (*Apaloderma narina*) flitting silently past to some branch, there to remain like a statue until the spirit moved it on again.

If one were quiet enough the sprightly and gay-coloured White-starred Bush Robin (*Pogonocichla stellata*) would almost certainly be seen hopping in the undergrowth. In more open situations were clumps of Balsam (*Impatiens*) with large Shield-bugs piercing their stems for plant juices.

Frequently when I was enjoying all these things the comparative calm of the ravine was broken by the loud croaking call-notes of Hartlaub's Touraco. This challenge was answered by another bird of the same species some distance away and yet another more distant until the whole ravine was echoing with their calls. After a minute or two of this outburst the strange forest atmosphere suddenly would return to normal.

Touracos, like most fruit-eating birds in the tropics, travel considerable distances in search of food, visiting certain fruit-bearing and berry-bearing trees scattered far and wide. They travel usually in pairs (though several pairs may be seen feeding together in one large tree) doing a regular daily round. One tree that I watched was visited regularly by two pairs of Hartlaub's which used to arrive on the scene by sunrise, remain about fifteen minutes feeding, and



then disappear for the day, returning to the same tree towards 5 p.m. for a final feed, presumably on the way back to their roosting-place. I have noticed these regular visiting hours with other Touracos, but here in the Aberdares they are upset during the olive season. In February and March food suddenly becomes so plentiful that there must be tons to the acre, and search for it becomes unnecessary. As if by magic there is a sudden invasion of Masai Red-headed Parrots (*Poicephalus gulielmi massaicus*), Olive Pigeons (*Columba arquatrix*), and Sharpe's Starlings (*Pholia sharpei*) so that the olive trees are alive with birds all feasting on the oily berries so lavishly supplied by nature.

The Touracos could be seen to regurgitate the stones once the fruit had been digested. When the olive season was nearing its end the pigeons, parrots, and starlings disappeared as quickly as they came, leaving the Colobus Monkeys and the Touracos in peace.

Hartlaub's Touraco, like all the other members of the family, is perfectly adapted for an arboreal existence, its partly zygodactyl feet enabling it to run along branches with the greatest of ease. Also it bounds from branch to branch more like a monkey than a bird. If temporarily deprived of the power of flight through loss of its primaries it will not be greatly handicapped if in forest. It will run through the branches and jump from tree to tree with great agility and will never panic and fall if chased.

The tail feathers come out remarkably easily (but grow again rapidly) which is surely a means of protection. It is by no means easy to catch hold of a Hartlaub's Touraco by the body for it instantly arches its wings and bounds strongly forward deflecting the hands to its rear end and so one is left holding merely a bunch of tail-feathers! This could easily happen to predators.

By setting a flue net with large pockets in a wild olive tree I was able to capture six Hartlaub's Touracos. These I kept in a small aviary until two days before my departure, when a native boy left the aviary door open allowing four to escape. However the remaining two were introduced to England in May, 1933.

Since the second world war a number have been sent overseas from Kenya by certain animal catchers, and a pair found its way to the London Zoo where they have been much admired. The call of the Hartlaub's Touraco does not differ greatly from that of the other Touracos of the same genus. Those who have become familiar with this sound in the wilds of Africa will be carried back there body and soul on hearing it in some Zoological Gardens.

\* \* \*



## BREEDING NOTES FOR 1953 AT WOBURN.

By THE LATE DUKE OF BEDFORD (Woburn, Beds, England)

It seems to have been the rather general experience that the past winter which, while not abnormally cold, certainly began abnormally early, and was very long and unpleasant, has had an adverse effect on breeding results this summer.

Rheas apparently found the winter so depressing that neither the three white birds which are now getting very old, nor the three grey ones which are young adults, succeeded in producing a single egg. Indeed the grey cock showed much less sign of being in breeding condition this season than he did last, when he was only two years old.

With waterfowl the season has been a rather poor one, but not so bad as 1952, which is the worst I ever remember. Ten Red-breasted Geese were reared and one young Emperor Goose. The latter was killed by a mysterious enemy which pecked out its eyes, without doing it any other injury, twenty-four hours after it was released as an almost fully-fledged bird among peaceful, moulting companions. The strange thing is that a similar fate overtook a young Magellan gander at the same stage of development about the same time last year, and a few years ago some adult Barnacle Geese suffered a similar fate. The Barnacles, when they were attacked, were far from the water, but the Emperor and Magellan were on the ponds. There seem to be no Crows or Magpies about at the present time, nor are there any predaceous fish which, if they injured one bird nearly adult, would also have inflicted injury on others which were adult but were not noticeably larger.

Of Barred-breasted Magellan Geese I now have only a single female left. She apparently nested away from the Park, and as usual had her eggs or young destroyed by vermin. In old days, with no more efficient keeping, it was extremely rare for broods of this family to come to grief. Now, however, it is quite the exception for any young to survive, the only Ashy-headed goslings reared being a few that were caught up and put under hens as soon as their parents had brought them to the water.

Snow Geese, Lesser Snow Geese, and Lesser White-fronted Geese, which for some years have not nested in the fox-proof enclosure in which they had been placed, were turned out in the Park for the summer as it is rare for foxes to cause trouble except during the winter months. None of the birds, however, nested, and spent most of the time wandering about trying to reach an Arctic breeding ground on foot!

A fair number of Carolina Ducks and Cinnamon Teal have been hand-reared. It is unfortunate that the latter pretty little bird usually falls a victim to coccidiosis when kept in the only enclosure which is



reasonably safe from vermin and that the males, when in breeding condition, appear to be so spiteful towards their own kind. Full-winged, they do not appear to stay.

Coming now to the members of the Parrot family, neither pair of Roseate Cockatoos made any serious attempt to nest, and I have heard of other reliable breeding pairs in other hands behaving this year in a similar fashion. The Gang-Gang Cockatoos reared one young male instead of their usual two children.

The old pair of Brown's Parrakeets, which reared a good brood of five the first year I had them, but lost their young at ten days the two following years, this season got no further than inspection of nest-boxes. A short while ago I found the hen Brown's on the floor of the aviary shelter holding her head on one side, and evidently seriously injured as a result of some fright she had sustained during the night. I expected to lose her, but after some days she fortunately recovered.

For a second hen imported last year who proved an extremely difficult bird to acclimatize, I managed to secure a mate in late summer. Although she appeared to be very much in breeding condition at the time, and the pair took to one another at once, she too, got no further than occasionally examining a nest-box until it was too late in the year for it to be any use to encourage a breeding venture. The new cock had been mated to another hen before I received him, and in order to avoid complications due to the fidelity common in this species and some other Broadtails, I took precautions before introducing him to his new mate to induce in the cock's mind the conviction that his former marriage was a thing of the past with no possibility of any renewal. After being kept by himself for a few days before he was sent to me, I kept him also by himself for some days in a cage in the strange bird-room. After giving him ample time to become rather bored and lonely, and to forget his former home and associations, I had him brought out in his cage to the hen's aviary and put down quietly just outside it. The introduction went off perfectly. She greeted him with enthusiasm, but also with the modesty which a cock Broadtail expects of his prospective mate, and when it was obvious that he too was favourably impressed we turned him out in the aviary as quietly as possible.

The old breeding pair of Rock Peplars hatched five of their six eggs and reared a very healthy family—not a bad performance in view of the fact that the cock nearly died of coccidiosis last autumn and was extremely ill for a long period.

One of the two young birds I trained to fly at liberty was lost through a curious and unlucky accident. I had three odd hens untrained as liberty birds and, having sold one of them, told the aviary attendant to catch her up. This he did, but failed to notice that the catching net had a hole in it. She discovered it while being



carried down to the bird-room, and shortly afterwards picked up one of the two liberty birds and went away with him, neither being heard of again. It was fortunate that I did not lose both youngsters.

The old pair of blue Indian Ringnecks again did well, rearing four young ones. This season the cock, always a rather queer-tempered individual, got bored with his entire family soon after the young had left the nest, and had to be removed to prevent him doing them an injury. A young pair of two-year-old blues seemed to be on the point of nesting when, through the agency of "X" or some mysterious and unlucky accident, the little inspection door in the side of the nest-box got open which so upset and alarmed the hen that she lost all interest in further operations. The third two-year-old young cock, as recorded elsewhere, produced two green young when mated to a lutino hen. The young I am rather afraid are both hens so that, while they would be split for blue, they cannot, unfortunately, carry any factor for albinism.

A pair of Leadbeater's Cockatoos, three years old, were obtained too late in the season to give them much chance of settling down to nest, and the pair of imported Citron-crested Cockatoos are so terribly nervous that it is not surprising that they also did nothing.

The hen of the pair of Princess of Wales Parrakeets began by behaving in a tiresome way which is too often characteristic of her sex and species. She occasionally went into the nest-box, but instead of depositing her eggs there she laid several from the perch until I put some soft material under the latter to deprive her of the pleasure of hearing them fall with a plop on the cement floor of the aviary flight when she decided to place a few in the nest itself, and even sit on them. When her young were half-grown she made a hearty meal of their plumage, so that they left the nest with little more than tail and flight feathers, but in the end they recovered and showed no sign of the bad treatment they had received. The cock, unlike many cock Princess of Wales proved a most devoted husband and father, not only feeding the hen regularly, but also feeding the young when they left the nest long after their mother had ceased to take any interest in them.

The Barrabands did not seem a very promising pair as the hen, imported the previous summer, was extremely badly affected with eye disease, and was only cured with great difficulty by the skill and patience of Dr. Lake. When the nest-box was put in, for some time she took only a very casual interest in it. This, however, did not please the cock as I was made aware, not so much by the evidence of my eyes, as of my ears. With Barrabands, the cocks are the weaker sex so unlike Broadtails they cannot beat up their wives when they feel the latter are neglecting their domestic duties. What they cannot accomplish by force, however, they can sometimes bring about by continual nagging. The cock Barraband, when he is annoyed about anything, shows it, not only by ruffling his feathers and flapping his



wings, but also by making a peculiar peevish, whining noise. In this form of complaint the cock Barraband began to indulge from morning till night until it so got on his wife's nerves that she went into the nest-box and laid six eggs. Five young birds were hatched and reared, but one or two of them were somewhat rickety, though others were good specimens.

Manycolours reared two broods, four cocks and a hen in the first and a cock and two hens in the second. I kept one of the hens as a mate to a single cock Hooded to find out how near the hybrids would resemble Paradise, but unfortunately she has just died. The old hen, also, became ill with coccidiosis, but eventually made a good recovery. The first sign of illness was that she appeared to experience a slight difficulty in flying and when she was at her worst, she was not only unable to fly, but quite unable even to open her wings. The power of flight was regained quite suddenly after she had been improving for some time. On the whole, however, coccidiosis has not been quite so troublesome this year as it usually is, possibly because I have been giving all susceptible birds a course of "Embazin" at three-weekly periods during the dangerous period, i.e. July to October. It is said that no drug will prevent coccidiosis, but that a bird may be cured if it has already been infected but the microbes have not yet reached the stage at which they begin to affect the health of their victims.

Two pairs of Elegant Grass Parrakeets, one consisting of an imported cock and an English-bred hen and the other of two young birds I, myself, bred last summer, laid three lots of eggs each, but not a single one proved fertile.

Turquosines did equally badly. The first lot of eggs from my old pair were all clear, and the second lot had young dead in the shell. The third lot produced more young dead in the shell and one chick that died as soon as it was hatched. The fourth lot I gave to a pair of Elegants, but the hen gave up sitting just before the Turquoise eggs were due to hatch.

Bourkes did rather better. My old pair reared two young in their first brood and two in their second. The cock, just as he did last year, started to bully the hen when the young of the first brood were still quite small, wanting her to go to nest again, so I removed him and disposed of him at the end of the season, as this stupid behaviour is not normal with Bourkes. In fairness to him I ought perhaps to add that when I returned him to the aviary for the second round he was perfectly well behaved with his two fully-fledged children, although he had not seen them since they were quite tiny. The second pair reared three young in their first round and two in the second, a third dying in the nest. The young cock in the second round is a particularly beautiful specimen, large and richly coloured, so that I am keeping him as a mate for the hen with the unsatisfactory husband.



A second pair of Turquoisines only produced two lots of infertile eggs. I bred the cock myself last year, and had some difficulty in mating him. The hen, which I got for him last autumn, who was a few weeks older than he, started to bully him, so that I had to keep them separate during the winter. When they were in breeding condition in the spring, I tried them together again, but the cock had neither forgiven nor forgotten the treatment he had received and attacked the hen most savagely. I managed to get him another hen who at first he found attractive but rather alarming. Before long they became good friends, but as I have already said, have so far produced no offspring.

The hen Splendid Grass Parrakeet was alone all winter and came into breeding condition rather early in the spring. After calling unavailingly for a mate for some time she apparently gave up all hopes of matrimony and consoled herself by indulging, not wisely, but too well, in the pleasures of the table, becoming exceedingly fat. I greatly feared that there might be trouble if she started laying when I managed to get her a mate later in the year, and my fears proved, unfortunately, only too justified, for she died egg-bound with her sixth egg without ever giving us a chance of seeing that she was ill. Another pair which I acquired in the spring did better, rearing five young ones.

With some difficulty I succeeded in obtaining two hen Nyasa Lovebirds. I have a lutino cock imported from Australia some years ago. In case the cock proved strictly monogamous and ignored one of the ladies, causing her to feel frustrated and bad-tempered, I included in the aviary an odd cock Budgerigar together with a violet cock and rainbow hen of the same species. Both hen Lovebirds went to nest, and both ignored the Budgerigar but, although the cock was friendly with both ladies his friendship with one has been I think, purely platonic, and none of her eggs has hatched. The other produced three green young ones which, after the custom of most Lovebirds, she well and truly plucked in the nest, although they have now grown their feathers perfectly. It would seem that some lutino Nyasas, if not all, are not sex-linked as an American aviculturist has bred quite a lot from a lutino cock and a green hen and all the young, like mine, have been green indicating that the non-sex-linked cross is recessive. The pair of Budgerigars reared a large brood—a yellow-faced violet, a yellow-faced cobalt, two ordinary violets, a cobalt and a sky-blue, and the Lovebirds did not interfere with them; indeed the hen Budgerigar was master.

Fischer's and Masked Lovebirds, let alone, of course, Peachfaces, are most unsafe companions for Budgerigars, but the small Nyasa and Black-cheeked are often, I think, reliable.

\* \* \*



## EYE DISEASE IN SMALL BIRDS

By E. B. TANNER (Finchley, London, England)

Following upon the recent articles on the above subject by Dr. Lake and Mr. Hastings, I should like to utter a warning to make sure that the complaint is not due to a simpler cause, namely dirt and germs introduced through the eye and leading to death by septicæmia, as the post-mortems have revealed. The same symptoms apply in every respect. If taken in time, however, four or five applications of boracic lotion are sufficient to effect a cure, especially if the patient is kept in a cage alone, with scrupulously clean perches and with clean paper (not sand) on the floor. It is, perhaps, unnecessary to remind one that the bird's beak should be held downwards whilst douching the eye, thus preventing the lotion from being swallowed. Of course, once the eye becomes swollen and sealed, as described by Dr. Lake, this treatment is of no avail, and my experience in this case has been death due to the cause as stated above. Perhaps the remedies he mentions may avail in these cases. During my many years in charge of the Bird House at the London Zoo I have found that eye troubles could usually be traced to this source, being undoubtedly contracted from dirt and germs deposited on the perch by the bird's feet, etc., being then picked up when the bird follows its usual habit of rubbing its face on the perch. I am practically certain that the use of natural tree branches *inside* the aviary is one of the chief reasons why birds pick this up. The rough surface and crevices form ideal lurking places for dirt and germs, and it is almost impossible to clean them properly in spite of every care. In *outside* aviaries where they are exposed to rain, they are not so bad, but even there I would prefer planed perches for a high margin of safety, though I know that it is said that branches are more natural and, with their varying thicknesses, are better for the birds' feet. As to the former, it must be remembered that birds do not congregate on one or two branches continuously, but have an immense selection. I do not think the latter of very great importance, but planed perches can be of several diameters if preferred. Of course, they should not be thick enough to catch droppings when the birds are upon them. I may say that I cannot remember a case of this sort amongst the birds kept in the small cages at the Bird House, where they have planed round perches, and cases always occurred in aviaries where tree branches were used. Eye disease used to be common amongst birds sent to dealers by sea when the perches were in a filthy condition on arrival, either due to neglect, or, in some cases, wrongly constructed travelling cases which did not permit of the perches or even the water tins being cleaned. I would advise that a bird should receive treatment as stated directly an eye



shows signs of weakness. The weakness may, of course, be due to the bird colliding with some object—this often happens—but the bathing will be of the same service, and will be a safeguard while the eye is weak and apt to get infected. But perches that can be properly cleaned are the best of all—a preventative.

I should like to add that I was induced to submit this suggestion on remembering a number of small private aviaries and also public collections where tree branches have been left without cleaning or renewing for long periods, by their appearance. Infected birds could be seen at times, their owners or custodians being innocently unaware that prevention was in their own hands.

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## OBITUARIES

### MISS E. F. CHAWNER

The death of Miss Chawner on Friday, 16th October, in her 88th year, has removed one of the oldest members of the Avicultural Society, which she joined in July, 1899, and one whom the Society honoured by making her a life member after she had been a subscriber for fifty years.

As an aviculturist she was first known for successes in keeping and breeding owls when she lived at Lyndhurst in the New Forest. For her as well as for everyone at Leckford it was great luck that she should have written a charming article in the Magazine about these owls, because after reading it Mr. Spedan Lewis got in touch with her through Miss Knobel, and asked her if she would come and take charge of a big collection of birds he was forming in the Thames valley.

There she had charge of a collection ranging from Macaws to Sun-birds and including about three hundred owls, a number of which bred.

Later Mr. Lewis disposed of that collection when he moved to Leckford, but after getting the estate in good order, he built one of the finest ranges of aviaries and waterfowl enclosures, and started to form another collection. Here he and Miss Chawner assembled a magnificent collection of pheasants, owls, touracous, cranes, and waterfowl, as well as a number of odds and ends.

Miss Chawner was Editor of the AVICULTURAL MAGAZINE from 1935 to 1938, when she was succeeded by the present Editor.

In 1938 Miss Chawner was also beginning to wish to retire from her other work and, once again through Miss Knobel, Mr. Lewis appointed a curator, this time me. I came to Leckford to succeed Miss Chawner in 1939.



I shall always be grateful that I had the luck to come to know Miss Chawner really well. She was a highly cultivated woman with a delightful sense of humour, and was also a shrewd judge of people. She was an entomologist of distinction and discovered and described the life cycle of two species of sawfly previously unknown in this country. When Miss Chawner decided to give up serious collecting, the Keeper of Entomology of the British Museum (Natural History) came to see her collection, and took a number of specimens to add to the national collection. Miss Chawner was also a great botanist, and would go miles to see a rare plant. Like a number of aviculturists, she was a really knowledgeable gardener, and it is primarily to her that I owe the great pleasure I get from growing rare plants, and indeed for a good number of the plants I grow.

I think Miss Chawner's most striking qualities were her serenity and her lively interest. She always remained what she was, a cultivated Victorian countrywoman. She was not only a very good all-round naturalist, she was also a unique friend to all who knew her well.

F. T. J.

#### THE DUKE OF BEDFORD

The tragic death of the twelfth Duke of Bedford, which occurred on 9th October, has been a severe blow to the Avicultural Society and its Magazine, to the Zoological Society, and to all who are interested in the keeping of wild animals, including birds, in captivity under the best conditions. The collection at Woburn was in the past the finest in the world, thanks to the skill of the late Duke's father, and much of it has been fully maintained and even improved by the Duke whose death we now mourn, for he inherited a love of animals from both of his parents. His father's interest was, perhaps, chiefly in the larger mammals, the deer, bison, and so forth, but he also maintained a fine collection of birds such as waterfowl, pheasants, and cranes, while flocks of Crested Pigeons might be seen in the trees or on the lawns. His mother was a very good ornithologist, bird-watcher, and bird protectionist, one of the very first lady members to be elected to the British Ornithologists' Union, and for many years Vice-President of the Avicultural Society.

The only child of these animal-lovers grew up to love the rare creatures around him, and persuaded his parents to let him keep some himself. He was chiefly fond of birds, and soon had a good collection of foreign finches, waxbills, and weavers which he accustomed to fly loose and make their nests in the gardens around Woburn Abbey.

Among the greatest of the Woburn treasures is the herd of Père David's Deer which the eleventh Duke started from a very few specimens collected from various Continental zoological gardens, the



only remnants of the herd that formerly occupied the Imperial Park in Peking. Under the care of his son the herd has increased to more than three hundred magnificent animals, the only ones in the world except the few the late Duke gave to Whipsnade, Bronx Park, and a few other places. A very similar story might be told of the almost extinct European Bison which has probably been saved from extinction by the Duke and his father.

The war destroyed much of the Woburn collection, but it was being built up again by the Duke. Only a few weeks before his death he told me he was going to try to replace the flock of Australian Crested Pigeons for which Woburn was formerly famous; but for many years past the Duke's favourites among the birds have been parrakeets, of which he had a collection with few equals in the world. Many very rare species were represented, as well as rare varieties such as the famous blue Ringnecks. Members of the Avicultural Society are familiar with his experiments in evolving a strain of Homing Budgerigars which has proved quite successful, both at Woburn and in Devonshire, and as recently as last September he invited me to spend a night at Woburn so as to be able to see the release of the Budgerigars in the early morning.

In a large outdoor aviary amongst wooded surroundings were some hundred or so birds, mostly from early broods this year, and at 7.30 a.m. a door at the top was opened and out flew a crowd of various colours which had apparently been waiting for this moment. They flew around in evident enjoyment, some settling upon the high trees, while others made straight for a bunch of millet sprays, but many circled around showing off to perfection their arrow-like flight which can never be seen properly inside an aviary. None of them seemed to want to go far away from the aviary which they regarded as their home, and to which they kept on returning through funnel-shaped openings in the sides. It was a wonderful sight, never to be forgotten.

Under the title of Marquess of Tavistock the Duke (who succeeded to the full title in 1940), has written many very excellent articles for the AVICULTURAL MAGAZINE, of which he was for a time Editor, while his *Parrots and Parrot-like Birds* has proved of great value to many aviculturists. He had never lost his early love of wild creatures and had kept up as far as possible, the wonderful collection established by his father. He was a thoroughly good man, and besides his great love of birds and beasts, was very kind to those of his fellow human beings whom he considered needed his help.

D. S-S.

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*[By courtesy of Country Life.]*

THE DUKE OF BEDFORD WITH BUDGERIGARS AT LIBERTY IN HIS  
GARDEN.





Female Little Ringed Plover at nest ; note light eye-rim and dark bill.



Male Ringed Plover at nest ; note lack of eye-rim and pale base of bill.

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## SOME STUDIES ON THE LITTLE RINGED PLOVER

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With line illustrations by ROBERT GILLMOR

### INTRODUCTION

Before 1938, when the first known nesting took place at Tring in Hertfordshire, there were probably less than twenty authentic records of vagrant Little Ringed Plovers (*Charadrius dubius*) in Britain. Since then the bird has invaded our country in earnest, finding a habitat mainly unexploited by other species, and now in 1953 is well established as a regular summer resident (probably about 100 pairs at a very rough estimate) in south England—from Berkshire in the west (with an outpost in Gloucestershire), to Kent in the east, Sussex in the south, and Northants and Cambridgeshire in the north—with the main population centred in the London area. Yorkshire and Stafford also have some pairs, but in Wales and Scotland the bird is still only an irregular visitor. I do not propose to deal further with spread and distribution here, for this has been fully treated by E. R. Parrinder in the pages of *British Birds*, *Bird Notes*, and the *London Bird Report*, but rather place emphasis on behaviour, some aspects of which I aim to describe in fair detail, basing my remarks mainly on personal observations on several pairs in Berkshire since 1949. As a background for this description I have given a “potted” life-history account in the next section.

Now that many observers are Little Ringed Plover conscious, I doubt that the birds are overlooked to any extent, but prior to the later war years this was certainly not so. Confusion is possible with the larger Ringed Plover (*Charadrius hiaticula*) and I wonder how many Little Ringed were formerly written off as the common species. The two birds are readily distinguished though very alike in plumage. The best distinction is that while the Ringed has a clear white line on the upper wing surface the adult Little Ringed has none at all (but beware, for the juvenile Little Ringed has the very faintest suggestion of one). Additionally, I find that the orange-yellow eye-rim of the Little Ringed is a good field-mark which the Ringed lacks; even unfledged young have lemon-yellow eye-rims visible at very close quarters. There is also a marked difference in the adult's bill colour; the Ringed has a conspicuous yellowish bill base while for field purposes the Little Ringed's is more or less entirely dark. A less satisfactory character of the Little Ringed is the thin white line over the forecrown behind the black forehead band. The usual call-notes heard (which are in fact the alarm-notes) at once separate the two species: the Ringed's is a liquid “too-ee” (with emphasis on the last syllable), the Little Ringed's a more incisive “pee-oo” (with stress on the first).



Their habitat preference, though there is occasionally slight overlap, is generally distinct, the Ringed being the sea-shore species, the other the inland fresh-water one. Of course, both species may occur on the other's habitat on migration.

#### LIFE-HISTORY SUMMARY

It is probably still too soon to attempt an accurate survey of the main arrival period of Little Ringed Plovers in this country from their winter quarters abroad. Our records are not sufficient and there seems to be a great deal of wandering by, presumably, first-year birds which may turn up at a site for the first time quite late in the season, as may other individuals which have bred unsuccessfully elsewhere in the country. However, April is probably the month in which most birds arrive, but in the last few years March records have increased (earliest local one, 25th March). Male and female may reach the breeding-ground at about the same time and, while it is not certain, or even likely, that they travel together, they do at times form pairs very soon after arrival. Often, however, the male comes first and is joined by a female later, nineteen days being my longest record of the interval between the two arrivals. It is possible that lone females settle for only a relatively short time, sufficient to rest and feed, at sites unoccupied by males.

While on the Continent Little Ringed Plovers are mainly river birds, where they nest on shingle-banks, etc., in England gravel-pits and the like are the main habitat. Some of these pits are much frequented by humans, but the birds are very tolerant. What the plovers need most are not peace and quiet (though very desirable) but some mud or marshy spot on which to feed, and a stretch of not too overgrown gravel on which to nest. In this country man would seem to be the species' main enemy—in the form of gravel-pit workers and their machinery, over-keen bird-watchers, heavy-footed trampers, egg-collectors, etc.

On the breeding-ground, soon after arrival until departure, the male Little Ringed Plovers, especially, show a variety of aggressive behaviour-patterns towards other individuals of their own species (aerial and ground display, call-notes, and, occasionally, fighting), particularly in the area of the nest-site. They do not, however, confine themselves to their territory but wander locally, learning to avoid neighbouring territories, and feed at "neutral" spots which no one pair owns, though aggressive behaviour may be shown there.

Sexual behaviour may appear soon after the arrival of the birds; in fact the very fact that male and female are paired is by itself a sign that sexual relations have already commenced, at least at low-intensity for pair-formation is no doubt effected by attempts at the coitional-ceremony (see below). Copulations and scrape-ceremonies may be



seen almost at once and early arrivals can have eggs by the third week of April, though May seems to be the month when most eggs are laid. The clutch of four takes just over three weeks to hatch and the young fly about three weeks after that. Both parents incubate and tend the young but sometimes the male plover is left "holding the baby" while the female at least prepares for a second brood, or, in the case of later nestings (June–July), actually leaves the breeding-ground. Genuine second broods (i.e. not repeats after failure) have not commonly been recorded (Bruce Campbell gives no instances in his recent book *Finding Nests* (1953)) ; in fact my own records of local birds in 1952, when two pairs laid second clutches, seem to be the only British ones.

Some adults leave the breeding-ground as early as July (when others are still engaged with repeat or second-brood clutches) but August is the main departure month, birds being less frequently noted in September. There are as yet no foreign ringing recoveries of British Little Ringed Plovers (only a comparatively few have been ringed) to give us even a pointer as to the wintering area of our birds, but this undoubtedly is the Mediterranean region and northern Africa.

#### SEXUAL- AND AGGRESSIVE-BEHAVIOUR

Much recent work on birds and fish by comparative-ethologists has demonstrated an important fact about the display of animals : when an individual displays the main drive behind its behaviour at the moment is in some way stopped from fully expressing itself. To expand, a male performing its courtship-display is urged on by its sex-drive. This drive has, as its basic objective, copulation with the female but display appears instead, perhaps when the sex-drive is low in intensity or when the female is not fully responsive, but most commonly when it comes into conflict with one or both of two other drives aroused at the same time—aggression and escape ("fear"). Both of these are a very usual response to close contact with fellow members of the species, and the male just cannot help feeling towards the female in the same way. Similarly, when a male performs threat-display, this is a sign that the aggressive-drive, which has attack as its basic aim, is inhibited—usually by an escape tendency. Thus, while the distinction between sexual- and aggressive-behaviour in the Little Ringed Plover is clear enough, it is not absolute. In this species too, there is a strong element of aggressive feeling in the courtship reactions, and both sexual- and aggressive-behaviour are mixed with an element of escape. This link is well demonstrated by the male's "upright" display and associated activities, which usually precede copulation, the whole sequence of which it will be convenient to describe next.

The male plover approaches the female in an initial posture very similar to the *horizontal threat-display* (see below), his gait a smooth, gliding run (*glide-run*). Often she shows pure escape-reaction by



running away and "bobbing", i.e. standing and jerking the head, neck, and forebody upwards a number of times, a typical response of alarmed waders. Sometimes she flies off with the male in chase, but usually she allows him eventually to catch up with her on the ground without flying away. The female being relatively still, the male's display can continue. As he nears her, his footsteps get progressively shorter, his speed diminishing, until he stands alongside the female with a deliberate *marking-time* movement on the spot, sometimes with such vigour that he strikes his breast with the alternately raised feet, the body however remaining steady all the while. During this approach he raises his body from the horizontal to the vertical plane with chest expanded, black band conspicuous, and head held high (*upright posture*). The female meanwhile has crouched down and the male soon mounts. Copulation proper does not always follow immediately, the male squatting down on bent tarsi, perhaps continuing to mark time on her back for a few seconds, sometimes as long as half a minute. Coition itself is effected very rapidly as the male flutters off backwards, his tail bending under the female's which may tilt to facilitate the union of the cloacas. Once, a nondescript high-pitched note was heard. Both birds then glide-run away from each other (escape) and commence displacement-feeding (see last section for a note on "displacement-activities"). Occasionally the male may show the same sequence of display (approach, upright-posture, marking-time) to rivals and undoubtedly this is the mechanism of pair-formation, as the German ornithologist Laven found to be the case in the Ringed Plover. If the approached bird crouches it is accepted as a female and display, mainly aggressive till then, switches over to a fully sexual response. If, however, it shows male behaviour, threatens back, etc., the responses continue on their aggressive course, a fight perhaps resulting. A further interesting fact supporting the view that the pre-coition display is partly an aggressive one, is that the whole copulation ritual may follow a territorial encounter in the Little Ringed. I have noted a very similar state of affairs in the Great Crested Grebe (*Podiceps cristatus*), a species I have been studying since 1948. The courtship-display, which is however not a pre-coitional one, often follows aggressive tiffs between rival pairs; on analysis, the aggressive elements of the display can be seen clearly. Another link between sex and aggression is provided by the displacement-feeding that occurs after coition in Little Ringed Plovers. This is a common component of normal threat behaviour when escape is the main tendency. Sometimes a newly formed pair will give alarm-calls when the two birds approach each other closely.

The *scrape-ceremony*, a beautiful display pattern connected with the nest-site, is best dealt with under sexual-behaviour. Though it is not a pre-coitional display, the male quite obviously has the female in



mind when performing, indeed the presence of a second bird is essential, and the normal copulation behaviour may follow or precede. The course of events is initiated by the male who begins to form, or enlarge, a hollow in the ground (*scraping*) by leaning forward and rotating on his breast, body and tail slanting up, feet scratching backwards. At the same time he opens his tail feathers, showing the conspicuous pattern of brown, black, and white, and as he rotates his



FIG. 1.—Male scraping and tail-flagging.

movements cause the tail to wave about conspicuously (*tail-flagging*), this probably functioning to attract the female's attention. She may then approach the scraping male and, if so, he gets out of the hollow, stands on the rim with his back to the female and now fans his beautiful tail right open over the scrape (*tail-spreading*). She slips under and into the shallow pit and he moves slowly away, tail still spread, at the same time picking up little pieces of stone and jerking them over his shoulder towards the nest (*stone-tossing*). As he gets further away his tail gradually relaxes. The female meanwhile may remain still in the scrape, rotate in it or move away. The male may then return and repeat his pattern or follow the female and scrape elsewhere, but sometimes the activities merely die down or copulation follows. Over the course of days, several scrapes may be formed, but eventually the female chooses one and lays her eggs in it. That part of the scrape-ceremony from the approach by the female onwards, has been termed the *symbolic-nest-relief* by Continental writers.

I have already spoken of the *horizontal threat-display*, a version of which





FIG. 2.—Symbolic nest-relief.

precedes the upright-posture and marking-time activities of pre-coition. Both sexes use this against rivals, holding the body horizontally, normally with the head sunk well into the shoulders, thus mainly hiding the black bib, and with the feathers of the underparts smoothly expanded, the flank ones pointing up over the closed wings. (In the pre-coition version, the under feathers are not so fully emphasized.) The aggressive bird glide-runs in this squat looking posture towards the opponent, a sure sign that real attack is not immediately imminent, for when it is the bird relaxes its display, the black chest-band coming into prominence, and runs purposefully forward, at high-intensity raising the back feathers a little and fanning the tail. Fighting may follow this, launched with the wings, and bill and claw are used if the birds get to grips, but this comparatively rarely occurs. Only occasionally will the attacked bird stay to argue the point. If it does the two birds perhaps even then only jump up breast to breast and separate again to threaten each other. At times, during more intense threat-display, the head may be less tightly sunk into the body and then the black bib shows up well. At lower intensities, the bird may stand or walk slowly about, with little or no orientation towards the rival, with the head held back, but not deeply sunk into the body, to meet the back feathers which are smoothly mounded up to a moderate extent (*hunched-posture*). The white under-feathers too are only slightly



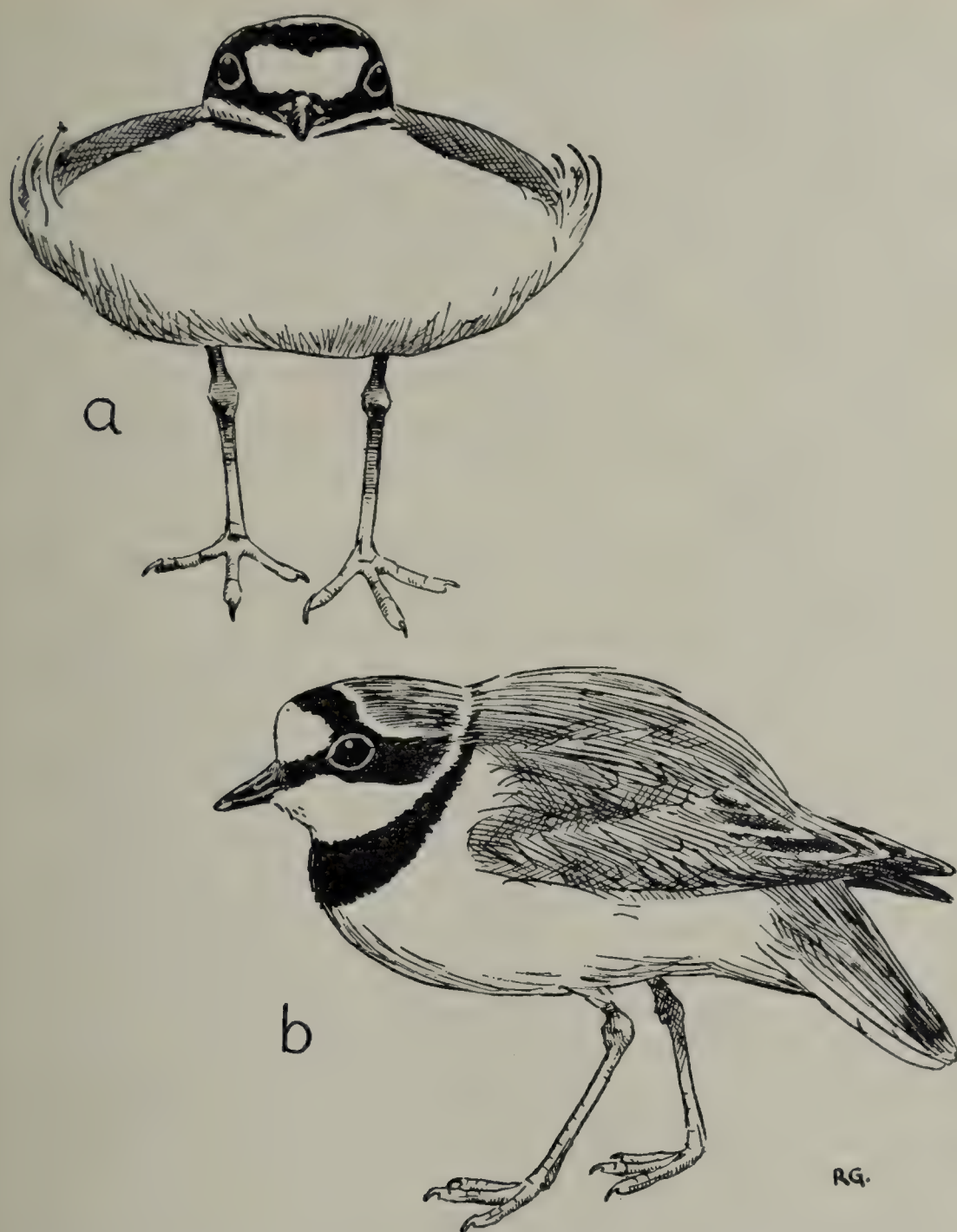


FIG. 3.—Threat : (a) horizontal threat-display ; (b) hunched posture.

expanded, the flank ones not pointing up over the wings, and the bib is not hidden. The tail may be spread and lowered, and at times the plover may stand up a little from the horizontal. In all display the orange eye-rim shows up conspicuously. A special threat-note (termed the *hostility-cry* by the Dutch ornithologist Sluiters) occurs during aggressive encounters (but not prior to copulation). This is a fast, mechanically ringing and rather musical “gree-gree-gree . . .” which becomes more slurred and higher pitched as it increases in speed. Less commonly, a series of low rolling rattles may be heard. At very low intensity the birds cease to display and displacement-feed or preen ; here we seem to have to do with a weak escape-drive.

Apart from ground threat, the male also has a *flight-threat-display* used



against flying intruders or from the air to birds on the ground. On seeing a trespasser in such circumstances (and at times the male plover is very unselective, reacting to his own mate and a variety of innocent birds of several species), the attacker moves towards it, in fast flight if the other is airborne, giving the hostility-cry. This may develop into display on close approach, the male stalling with rapidly quivering primaries raised in a medium V and describing a narrow arc. The tail is often fanned and, if the intruder is on the ground, perhaps elevated while the feet are slightly lowered. At the same time as the bird goes into display, the call changes to a very fast *buzzing-note*. This may sometimes be given in flight without the display. No real attack occurs in the air, but any of the ground activities may follow when the bird alights.

*Butterfly-display-flight* is another aggressive pattern. It commonly follows ground encounters with rivals, often when these have left the point of conflict, but sometimes occurring when no rival is involved at all, as for example when the male returns to the territory from outside. In this display the plover flies round the territory, curving backwards and forwards with the wings slowly beating, well extended, causing an illusion of a short tailed bird, and describing a comparatively small arc. Sometimes the bird tilts more from side to side with the wings flicking rather quicker, emphasizing the pale under-surface. A monotonous *rusty-call*, the "song" of the plover, accompanies this slow-motion flight, a deliberate "cree-ah(k)-cree-ah(k)-cree-ah(k) . . .". Some authors have called this display-flight a nuptial one but this interpretation is extremely doubtful. I have never seen it obviously given to the female and even if it is on occasions, we probably have to do with a case of the female releasing aggressive-behaviour in her mate.

On 22nd May, 1953, I saw an apparently unusual and interesting encounter between two males (A and C) at a feeding spot used by A for well over a month, but which now was presumably claimed by C as territory for a short while. When I began watching at 06.50, male A was scraping at moderate intensity and tail-flagging for a short while, more often merely standing and stone-tossing. His mate was incubating well-sat eggs about 300 yards away over the water. Male C was standing, facing away from A, a half-dozen or so yards from him, in the hunched-posture. At the same time he dipped his head and bill down towards and ground and back again several times, with the rest of the body quite still. Later observation showed that this was incipient stone-tossing. This male then glide-ran in the hunched-posture, finally turning towards A, tail fanned and lowered, and uttering a long series of hostility-cries. Both males then moved about in the hunched-posture, neither really facing the other, giving intermittent hostility-cries while A (apparently) also uttered several alarm-notes ("pee-oo").



Both also performed the head dipping movement which developed into stone-tossing and scraping, and displacement-fed occasionally on reaching softer mud. Finally, C flew up in low-level flight-threat-display at A and then circled about in butterfly-display-flight with hostility-cries from time to time, sometimes when flying just above A. Observations ended soon after at 07.30. I do not pretend to understand this encounter but it suggests a further link between sexual- and aggressive-behaviour.

#### BREEDING BEHAVIOUR

Copulation and scrape-making being achieved successfully, the breeding-cycle continues. No material is brought to the nest-scrape by the plovers which reach out from it and pick up items such as flakes of mud, dry bents, and the stones that tend to collect about because of the stone-tossing activity. These are added to the cup, which sometimes becomes quite substantial. It is interesting to note that the very large nest of the Mute Swan (*Cygnus olor*) accumulates in a similar way, by the raking-in of material by the sitting bird. Stone-tossing in the Little Ringed Plover is not confined to the scrape-ceremony, but may occur during incubation, when the clutch is incomplete and also when the parents change over at the nest.

Eggs are laid on alternate days and four make up the usual clutch, though later ones may be of three only. Incubation of sorts may start with the first egg but it probably becomes most sustained some time between the laying of the third and fourth. Both sexes incubate and the eggs hatch out in just over three weeks.

The first signs of hatching may show several days before the tiny chicks escape from the shell. The eggs first fracture at the point in the large end where the chick's bill, equipped with a whitish "egg-tooth" on the end of the upper mandible, taps at the shell from within. Such cracking may appear as many as five days before hatching though sometimes the fracture is still not obvious only a day or so before the emergence. At about the same time as fracturing, the youngster may be heard faintly calling "chip" or "cheep" if the egg is held up to the observer's ear. Doubtlessly the brooding parents can also hear this. As the tapping inside the egg continues, the shell is pushed outwards until a hole appears and the bill of the chick is visible. Finally the shell splits open into two main parts and the chick has hatched. The broken pieces are carried away from the nest and, so strong is the urge to do this, that I have seen a parent, calling its young after disturbance, chance upon a fragment of shell from the hatching one or two days previous and carry it away immediately to the water's edge. The chicks often hatch within a few hours of one another, apparently usually overnight. Sometimes one may be as much as twenty-four hours behind the others, but a more or less



synchronous hatching would seem to be desirable. The young soon leave the scrape, especially if disturbed, and a late egg may be left behind unbrooded. At one nest an egg had only a small hole in the shell some twelve hours after the others had hatched. The three chicks had left the nest so I acted as midwife by enlarging the hole with my thumb nail. Even so I was worried lest no adult returned to the nest, but in the evening one of the parents was seen to go to the scrape, call the chicks to it, and brood them and the egg together. The latter had hatched out by next morning and all four youngsters successfully reached the free-flying stage.

The chicks are damp on coming out of the egg and need brooding, indeed brooding is the main task of the parents during the first week or so of their youngsters' lives. The adults do not usually sit fully on top



FIG. 4.—Parent calling-up and brooding chicks.

of the chicks, like they do on eggs, but rather half stand, with fluffed underparts, and allow them to creep in underneath. Generally one parent is on duty at a time while the other waits "on guard" near by or goes off to feed. The young are not fed, though one popular writer has stated that they are. They find their own nourishment in the form of minute invertebrates (mainly insects) on the gravel or at the water's edge. The stomach of one very small chick, not much more than twenty-four hours old, contained the remains of many tiny beetles. Apart from brooding, the parents' other important task is to warn the chicks of danger and to deal with the would-be predator. The only predator of which I have had experience is man in the form of the observer—myself. On being approached by a human the bird utter the alarm-notes ("pee-oo" and "cloo"). When very young the chicks probably



always immediately crouch flat down at this and remain perfectly still, but larger young are usually only put on guard on hearing the calls. They show alarm by "bobbing" and displacement-feeding, only crouching when they see the predator or when the parents fly up from them, calling. Once down the chicks remain there until the observer has gone and the parent has reappeared. Small chicks advertise their position to the adult with a rather high-pitched piping. Larger young are called up to the parent by a fast repeated "pip-pip-pip-pip . . ."

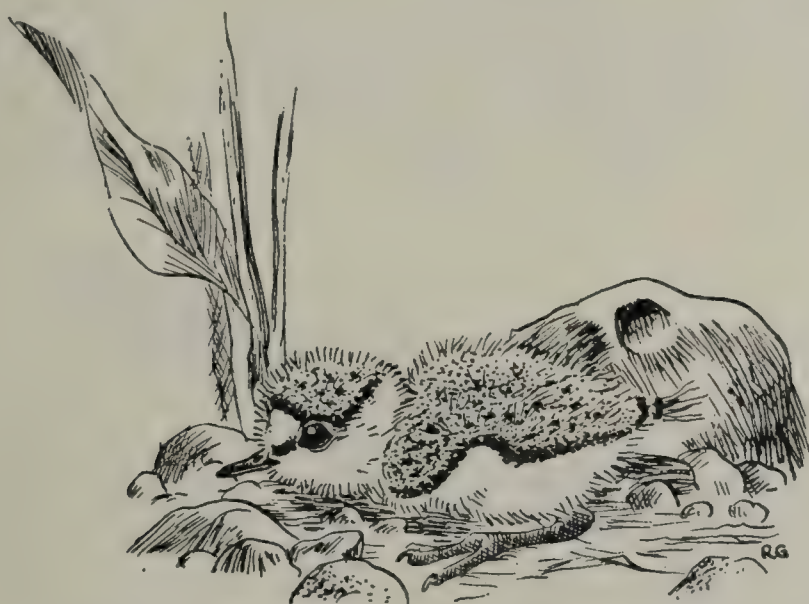


FIG. 5.—Chick crouching (drawn from life).

call. The best way of locating the chicks when unobserved approach is impossible is to allow the parent to locate them for you. First flush the adult, then retire to cover, or as far away as possible in the open, and stay still. Almost invariably the parent will soon resettle and, after initial alarm, go to or call up the chicks. Even if these are old and require no brooding, the return of the adult will stimulate them to move about again, but the older the chicks are, I find, the harder they are to track down. The younger the chick, the stronger the parental brooding-drive and the swifter the return to them. I once had the wonderful experience of seeing a female come and brood her single tiny chick only five feet from me as I lay perfectly still flat out on the gravel. The call of the young on being persistently handled is a trilling purr of a note. The chicks swim readily if needs be, even when not disturbed.

Apart from the behaviour outlined above, the adults may exhibit a very complex and elaborate set of reactions towards man, the potential predator. My studies have mainly dealt with this form of behaviour and it is worth outlining the whole gamut of reactions to man throughout the annual cycle in order to put those occurring during the chick-stage in their proper perspective. It is impossible, however, to give all



the intricate details and complex discussion of facts in the present paper.

In the winter and early days after arrival at the breeding-ground the main response to the close approach of man is escape. This takes the form of "pee-oo" alarm-notes, bobbing, displacement-feeding, and flight away. When the plovers have settled down in the breeding-territory, but before eggs have been laid, they still show alarm but seldom fly away unless really very closely approached. Instead they run ahead of the observer, tending to adopt a crouching position with legs bent, head in, and body more or less horizontal (*crouch-run*). This is often followed up by displacement-feeding. If the birds do fly they seldom go far. Some factor is inhibiting the full expression of the escape-drive, and we think that this is a tendency to attack, though the

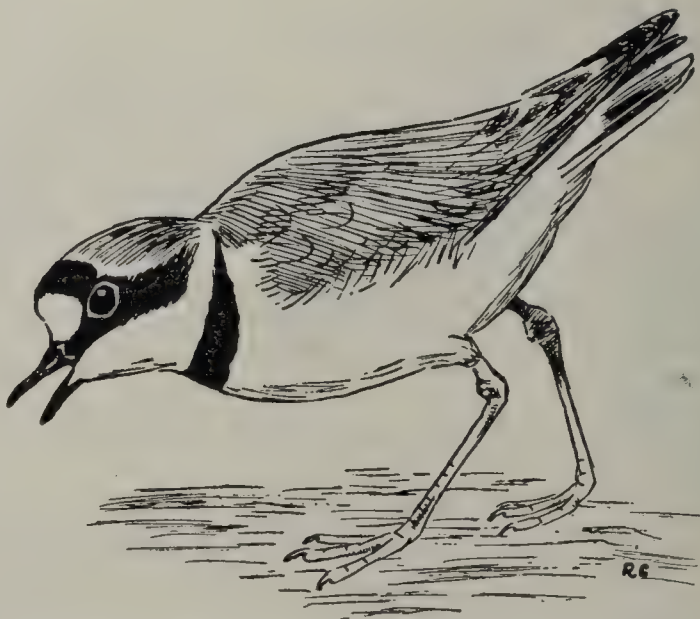


FIG. 6.—Bird giving alarm-note while displacement-feeding.

birds dare not do this to such an immense upright predator as man. Occasionally, however, the male will break into the territorial butterfly-display-flight and even utter the buzzing-note towards the intruder—a sure sign that he is feeling aggressive to him. Just before egg-laying another pattern appears. At the end of a crouch-run away the bird may stop and, instead of displacement-feeding and/or calling, it may lean forward and crouch down on the ground, sometimes in a hollow, and remain still there as if brooding eggs, perhaps for over a minute at a stretch if the observer does not approach. It may perform this *displacement-brooding* several times in succession. All the behaviour listed so far continues to be shown during incubation, but then the birds tend to do the brooding movement incompletely, crouching with the body slanting forward sharply, stern in the air, vent showing, and the legs only half bent (*squatting*). They tend now to run in a similar posture on occasions, in short dashes (*high-tailed run*) and the more incubated the



eggs become the more inclined are the birds to perform the most complex of the reactions to man—*distraction-display*. Until the hatching time, however, the plovers do not draw attention to themselves in the area of the protectively coloured eggs. They fly silently away with perhaps the first signs of peculiar flicking wing action (*impeded-flight*) and show the more elaborate behaviour at some distance. Apart from



FIG. 7.—High-tailed run (from a field-sketch by the artist).

the usual alarm-note, “pee-oo”, another call with a hard edge to it is common now, a fast repeated “cloo”. Near hatching time onwards, and especially during the first few days of the chicks’ lives, the parents are liable to perform intense distraction-display if sufficiently stimulated. Impeded-flight becomes very pronounced as the birds flit round the observer and calling increases a great deal. As the chicks get older the elements of reaction drop out one by one in the order in which they appear, until when they are free-flying the adults are showing the same reactions as in the pre-egg period.

Distraction-display is very intricate, varying much in intensity depending on the age of the chicks and the degree of stimulation. High intensity display is to be expected when the young are small, lower intensity prior to hatching and when the chicks are older. However, once when I was ringing two-week old young, one gave its purring alarm-note and immediately one of the parents flew at my head, swerved off, and broke into violent and totally unexpected display. In the following description the full intensity sequence is outlined; at any one moment, of course, the behaviour may be at any stage in this sequence and elements may be omitted. One so often reads that simply such-and-such a wader runs off fluffing its feathers and trailing a wing, that I may be forgiven for going into detail in order to show how much more is usually involved.

Crouch-running is the first ground reaction, probably after the plover has circled round in impeded-flight. This is succeeded by high-tailed running, the bird pausing and then dashing off again. Soon, at the end of a run, it may sidle to one side, sway its body round a little to get a better view of the observer, and then squat, the wings being now



free of the flank feathers. The first element of true distraction-display (*wing-hinging*) may now appear. With ducked head, the plover starts to move the closed wing outwards, at first with perhaps only a few slight tremblings. Soon the wings are trembled jerkily with a rotating action, the primary-tips moving out well from the sides. The bird often tilts over, now to one side, now to the other, hinging the opposite wing. The observer is soon conscious that much more white is visible

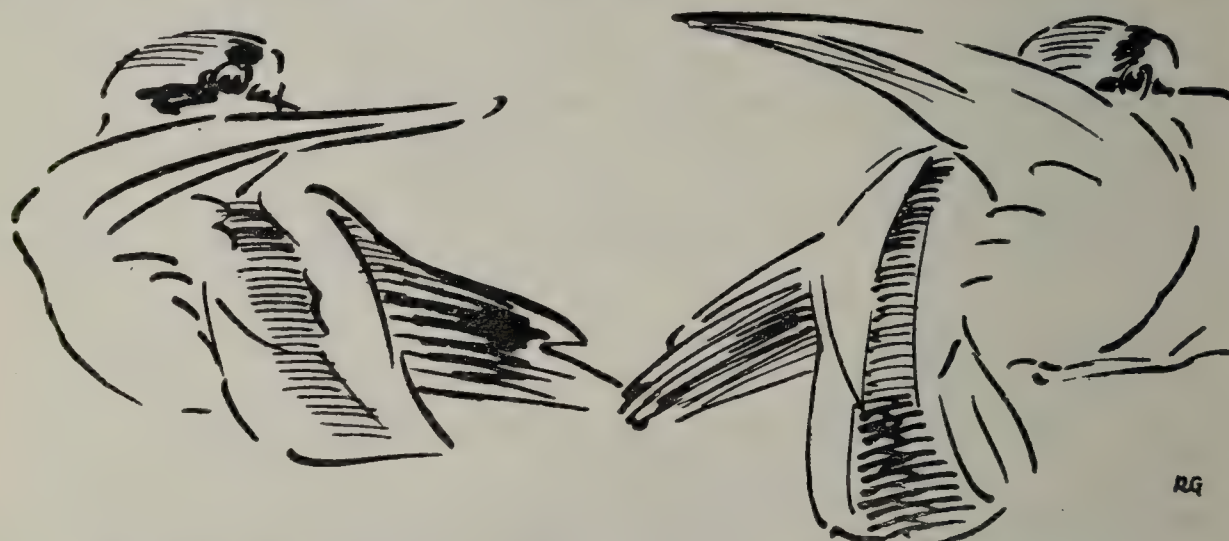


FIG. 8.—Wing-hinging distraction-display (from field-sketches by the artist).

on the upperparts than is normally the case, especially in the rump area. This is because the flank feathers are fluffed right up over the sides and on to the back so that only a narrow band of brown shows down the centre. The bird's conspicuousness is further stressed by the pale under-tail and belly feathers. On increasing intensity the wing movement speeds up into a rapid fluttering, still with the side-to-side tilting, and the tail may be fanned into its striking pattern and depressed to the ground. The position of the wing feathers is interesting all the while. The secondaries remain folded over the primaries as when normally closed at the side and the wing literally hinges outwards and forwards with the carpal fixed still at the side of the bird's breast. The pale undersurface of the wing is thus exhibited to the observer, who always views the displaying plover from behind. Wing-hinging develops into *wing-rotating*. The folded wing is now held out from the side, the carpal being no longer fixed, the bird raises its body more erect and rotates the wing rather like a schoolchild doing its elbow-circling exercise. The tail is usually fanned and lowered. From this the bird may switch to *high-wing raising*. The primaries of one wing suddenly flick out from under their secondaries, both retaining the same relative levels as when folded so that the wing is now curved. The wing is held straight up and is usually tilted forward slightly, showing the undersurface. The bird may rest thus, leaning on the side away from the raised wing, or occasionally flick up the other wing as well, lying with them both up and tilted forward. At still higher



intensity *open-wing flapping* occurs. With both wings partially or wholly open, the bird vigorously beats now one several times, now the other, against the ground, turning the body frequently as it does so. Sometimes the wings are merely flicked up and down one at a time,



FIG. 9.—Distraction-display : high-wing raising.

occasionally both together. Although the plover usually high-tail runs between bouts of static display, it may now and then run on while still displaying and occasionally fly low over the ground or water with tail still fanned and depressed and with very ungainly wing movements, probably a compromise between display and impeded-flight. Even more occasionally it may perform a *display-run* with the wings twitching up and down alternately at the sides. I once saw a beautiful version of this when a bird ran off twitching the wings under the fully expanded and lowered tail. Displaying birds are often silent. The two alarm-notes may be given during pauses or when the bird is merely squatting, but a peculiar *chattering-call* accompanies very high intensity display at times. While performing the bird tends to make partial use of cover, displaying in hollows, behind mounds, etc. The more worked up it becomes the nearer it displays to the observer. Really close display is not common, however, under usual conditions. The best way of



effecting a near approach is for the watcher to lie down. Probably when he destroys his outline and height he ceases to be a human as far as the plover is concerned, and the bird becomes less afraid. Often it stops displaying and then attempts to reach the chicks and brood them.

#### MISCELLANEOUS

In the broad details of its behaviour the Little Ringed Plover is very similar to its near relations, the Ringed and Kentish Plovers. The aggressive-behaviour of all three is much the same ; though the threat-displays and notes differ in form, they all have more or less the same butterfly-display-flight. The Little Ringed, however, alone has a well-developed flight-threat-display though there are signs of this activity in the Ringed Plover at least. Sexual-behaviour is more or less identical in Little Ringed and Ringed but very little seems to be known about the Kentish. General breeding-behaviour is closely similar in the three, except that the Kentish regularly lays only three eggs and these are often nearly covered over by the nest-scape material. The distraction-displays follow the same general trends, though there is much variation in detail, but the Ringed and Kentish have commonly used display-runs. So close is the behaviour of these ringed-type plovers that they seem regularly to try to keep one another off their breeding-territories. Avicultural evidence of interbreeding, which does not occur in the wild, would be very interesting. I wonder if any aviculturist would kindly advise me as to the possibility of keeping any of the three plovers in captivity from an early age onwards. An opportunity of such close study would be invaluable.

Male and female Little Ringed are practically impossible to distinguish in the field except at close quarters with the aid of binoculars. Then it may be seen that some females are definitely browner than their mates about the head markings, especially the patch through the eye, and have the orange eye-rim less bright. I find the sexes of the Ringed Plover easier to tell apart, again mainly on the intensity of the black markings, while in the Kentish there is a well-marked sexual dimorphism.

The Little Ringed Plover is a ground feeder, obtaining most of its food near or at the water's edge, on gravel, short grass, mud, etc. Its gait while hunting is a twinkling run, the bird stopping and dipping its body forward to seize prey. It shares with the Lapwing (*Vanellus vanellus*) and the gulls (*Larus*), among others, one curious habit apparently connected with food-seeking—that of making pattering movements of the feet on mud. In the two plovers this is a trembling action of one foot only while the gulls mark time with both feet. The habit probably functions to bring prey to the surface of the damp mud.



Mention has often been made elsewhere in this paper of displacement-activities, a concept which owes much for clear definition to Tinbergen and his school. In general terms, a displacement-activity may be described as a movement occurring when the internal drive in action at the moment is not the one which normally produces that movement. Thus, in the Little Ringed Plover it was seen that displacement-feeding occurs during encounters between rivals, after coition and in response to predators. Here we most probably have to do with a blocked escape-drive in some way and it is worth noting that on occasions the bird utters the alarm-note while doing the feeding movements. These movements are usually performed incompletely, the plover not really seizing and eating prey, but sometimes the full pattern is enacted, especially in response to predators at a stage in the breeding-cycle when distraction-display does not normally follow on increased stimulation.

Finally, a word to would-be Little Ringed Plover watchers. A great deal of work remains to be done on the behaviour and general biology (and I hope the present paper doesn't show too much how true that statement is!). For instance, we still need to know much more about pair-formation and the only descriptive side of aggressive- and sexual-behaviour has been touched upon in any detail, full analytic study being needed. The breeding-biology requires to be worked out in detail and measured. Among other questions are the following. Do the parents ever call the young to food sources, as do many gallinaceous birds which the plovers approach in so many of their behaviour patterns? What are the natural predators? Does the male Little Ringed bear the brunt of the incubation duty when the eggs are fresh, as the male Kentish Plover (*Charadrius alexandrinus*) seems certainly to do? The queries are numerous and the intending watcher is guaranteed a busy and interesting time whatever his bent.

#### ACKNOWLEDGMENTS

Sincere thanks are extended to the following: Robert Gillmor for his drawings, H. A. Thompson for his photographs, and C. E. Douglas for reading over the typescript of this paper.

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## BREEDING OF RIU KIU ISLAND ROBINS

*Icoturus komadori komadori* (Temminck)

By A. H. ISENBERG (Woodside, California, U.S.A.)

"Loochoo" Robins are among the most charming birds of the world, and are native to the Riu Kiu Island chain south of Japan. The species varying in coloration with their Island home. The species here mentioned is from Amami Oshima in the north of the group.

In my forty-odd years of collecting soft-billed birds, I have seldom long been without a male "Loochoo" Robin. The females are extremely difficult to obtain, the reason being that a male call bird is used in trapping, and females generally stay away. The males are very aggressive fighters. Of the only two females I have had, one was received in 1949, the other in early 1952.

The 1949 bird had two eggs, and sat for ten days, when a bowel upset killed her. This story relates this year's success. When the 1952 bird arrived, I had two fine males, one I had had for more than twelve years, the other about two years, and to this one my hen was mated this year. Since the female was not in fit condition upon arrival, I was compelled to keep her separate until April, 1953.

The female was in a large cage inside the 50 feet by 25 feet aviary where the male could see her for these many months. Early in March the male built a nest in an old natural log nest-box, but the female was not released until April. When released the male did not at once display, but he did sing to her and kept going in and out of his log, which is 18 inches from the ground, trying to interest her, but she would have none of it. There was another log nest hung about 8 feet up on a dead tree trunk, and to this one the female took a great interest, and in three days she had put quite a few dry bamboo and old moist leaves into it. The male was seen to look in once in a while, but he did not assist in building. The hen filled the log nest to within about 3 inches from the hole, and then formed the nest with dry grasses and horsehair. Now the male was seen to display and sing to his mate, and a pretty sight it is. He struts, not unlike a Turkey, with lowered wings, tail fanned out and held up over his back the while a torrent of lovely song pouring forth. The actual mating is a violent affair, so much so that I thought he would kill her with his fierce onslaughts. The next day one egg was seen in the nest, and another the next, then a third and sitting in earnest began. This log nest had a very large hole which worried me, as any bird or mouse could get in, but all went well for fourteen days, the male was a perfect guardian, and chased every other bird that came within ten feet of the nest, small or large; Grey Thrush, Chestnut-bellied Rock Thrushes, Indian Brown Robins, Hermit Thrushes, Daurien Redstart, Solitaires, etc.; the Loochoo was king.



The hen prepared small mealworms, flew to the nest with them in her beak, and then ate them, which indicated something was wrong. Upon looking in the nest I found it to be empty ! I blamed a number of things, other birds, mice (of which there were a few), but no doubt it was the male wanting to mate again, etc. I then caught the female and caged her for a week, thinking the rest would do her some good ; the male all the while went in and out of " his " nest. After again releasing the female, the male tried and tried again to interest her in his nest, but she chose a small square parrakeet nest-box which I had nailed some nine feet up on the concrete block wall of the shelter to the aviary. This nest-box has a platform under the  $1\frac{1}{2}$  in. diameter hole which she usually used before entering. She almost invariably approached the nest from the same direction. This box had been used as a sleeping place for an Indian Nuthatch, which was promptly killed by the male Loochoo before I could stop it. The female Loochoo again built the nest, and laid her three pale buff-coloured eggs after the usual pretty courtship. The male did not assist in incubation, but made quite a nuisance of himself fighting with all other aviary inmates. When the female had sat for a week, I caged the male so that he could see the nest and sing to her.

On the fourteenth day one young hatched, and on the fifteenth day there were three young in the nest. We were very lucky in having a good supply of very small mealworms, and many in the soft grub stage, also I had an old beehive with thousands of wax moth larva, to which the female was partial. All went well until the fifth day (my wife would feed her at regular intervals six or seven times a day, or approximately every hour when I was not home). We gave the hen two or three worms or grubs and larva at a time, which " dose " she two to four times took to the nest. Each time, for approximately the first week, she waited to swallow the faeces of the young, after which she carried the fecal sacas the length of the aviary, dropping them into the water. On her third trip to the nest I could hear her jumping up and down in the nest, and then she let out a Loochoo Robin shriek, and emerged with a dead young in her beak. She flew the fifty feet length of the aviary with the young one and I after her, she dropping it in the water. My spirits sank after this, as I pictured the other two young with the same fate, but luck was with me. On the seventh day all was going along beautifully, when I discovered a place not far from our house that had *thousands* of earwigs in old benches and tables, which were easily collected by holding a large bowl under the earwigs' hiding spots and pounding the spots with a hammer, upon which the insects literally poured out. I rushed home with my find, and needless to say " Mamma " Loochoo recognized the earwigs at once. I gave her only two at a time at first, after I had snipped off their pincers with a fingernail clipper. The next day I increased the number, but



always alternating with small mealworms, grubs, and wax moth larvae ; once in a while I had a "flying daddylonglegs" and a moth or two for her.

On the twelfth day my wife and I began discussing whether we should take the young or not. I held off until the fifteenth day, which was a bit late, as the young were ready to fly, and fly they tried when I did take them. It was almost a full day before they would take food from me, and one of them I did have to force a bit, but the next day all was well, and they begged for food readily. At this stage the tails hardly showed, and it was at least two weeks before they had tails long enough to wag up and down in true Loochoo style. The young were rusty brown and heavily speckled with lighter brown or fawn. I was surprised to hear them tuning up quietly when two weeks out of the nest. Now at approximately ten weeks, white and black feathers are showing, and some of the reddish ones too. The face and underparts up to now were greyish. As I write (8th August) the white underparts are quite noticeable, and the black feathers too, also the rich reddish-brown of the male is beginning to develop, but not the black face as yet. I hoped that both would be females, but no such luck. I feel certain the dead chick would have been a female. I am most contented with this success, even though on 1st August the female and mother of these two succumbed to a bowel upset. I tried Aureomycin and Enos Fruit Salts, but to no avail. Tragedies like this are difficult to understand, especially when the aviary is ideal for Robin-type birds, having much leafmould, lawn, bushes, rocks, moss, running water, bamboo forest, logs, etc., etc., and the male was caged. The female did not appear to be aged either. Oh, the patience of an aviculturist !

I will not, however, wait another thirty-five years for another female, but will go myself if friends in Japan can't get me one. If I were down to my last bird I would want it to be a Loochoo Robin.

By 1st September the two young males were in full colour and in fine condition and singing quietly all day long.

\* \* \*



## IMPORTATION OF PARROTS

### THE 1953 BREEDING SEASON

By T. R. HOLMES WATKINS (Griffithstown, Mon., England)

“ . . . the Ministry will be prepared to issue a licence for the importation of five parrakeets from Holland on receipt of an undertaking that your poultry have been removed from the premises and that none will be kept in future. The undertaking must also state that none of your collection of birds will be sold, either the progeny of the imported birds or any surplus stock from the collection, and that no birds will be given away or disposed of in any way other than by destruction.”

The quote is from the reply of the Ministry of Agriculture and Fisheries to an application made last May for a licence to import five Brown's Parrakeets from Holland, where they had been for some two months and had been described to me as “perfect nice and healthy ; 5 pieces being 2 cocks and three hens” !

After some “negotiation” (if such is the right word to use in regard to a Ministry Department) the restrictions were, in the particular circumstances of this case, modified to allow the import of the birds on my undertaking to remove all poultry from my premises and not to keep any in future, to isolate any birds imported from the rest of the collection for two months, not to sell, give away, or otherwise dispose of them, and not to sell, give away, or dispose of any of their progeny during the following two years. Negotiations had, however, lasted so long that my Dutchman became impatient and disposed of some of the five so eventually I only got a pair. In the meantime, however, a fine cock Brown's had been obtained from Sir Crawford McCullagh as a mate for another hen imported last year.

When, a couple of months later, I applied for, and obtained, a licence for a cock Crimson-wing, also from Holland, though the restriction as to poultry was rigidly adhered to the other provisions were slightly modified so as to provide that “the birds will not be sold, given away, or disposed of in any way other than by destruction or re-export”. Allowing the restrictions to be necessary, and it rather looks as though they have now come to stay, they must surely result in the loss of all the rarer species of parrakeets through natural wastage and in-breeding. But why pick on the parrots ; what of the finches, weavers, and others still arriving ?

\* \* \*

There must be an exception to every rule and if preliminary reports of a bad breeding season with parrakeets (“News and Views” for



May-June, 1953) materialized then for myself it was never better. It was also unique in that every adult mated hen nested and with one exception reared their young and there were some remarkable egg outputs. The collection now comprises exclusively Kings, Crimson-wings, Princess of Wales', Pennant's, Brown's, Pileated, and Splendids.

Among individual results and deserving of mention were firstly Pennant's. As most Princess are inveterate breakers so are most cock Pennant's inveterate eaters of eggs which is a very good reason why I think, so few are reared each year. I have at last devised a nest which excludes all but the most venturesome cock with the result that the two girls and I between us reared eight young.

Secondly Kings. The loss of the breeding hen last autumn after but one successful season was a big disappointment. A second hen that for the past four or five years had, with cocks that had failed to fertilize her eggs, laid and incubated clutches of six or seven eggs was mated to the widower. Instinct must this year have warned her what was about to happen for she laid but three eggs all of which hatched and were very well reared. Of all the parrakeets I keep, or have kept, Kings are the favourite and what a joy it is to feed a breeding pair with young. So soon as these chicks attained any size a pound of seed, half an apple, and vast quantities of groundsel were eaten each day. The two birds bred last year have turned out to be both cocks.

And, finally, a word about the Splendids. The season has conclusively proved that they are no more liable to sudden death than any other parrakeet and are reasonably easy to breed. I have yet to lose a bird from a broken skull or neck ; some broods are steady from the first, others wild, though not excessively so, and these latter almost invariably knock the feathers from the crown of the head and fracture the skin immediately they come out of the nest, but for that matter so do a good many other young parrakeets that are bred here. *The type of aviary you use and its seclusion or otherwise undoubtedly has a lot to do with these "mysterious" deaths one hears so much about.*

With the original hen, this season four of her 1951 hens were used for the first time. The five produced in the first "round" forty-six eggs. There were inevitable breakages amongst the eggs and loss of newly hatched youngsters by the inexperienced hens (it was one of these hens that was the breeding failure, she losing one by one her five young) but the joint effort of the others resulted in twenty-two very good young being reared. Second nests were almost a complete failure, for which the weather was entirely to blame, and only one further young bird was reared from four clutches. Two hens apparently thought they might miss the boat if they sat, so decided to play safe by abandoning their eleven eggs and falling into moult instead ; they were probably right, as one of their sisters did lose her small brood when the weather turned quite cold late in September.



## ELEGANTS IN 1953

By I. BATY (Ponteland, Newcastle-on-Tyne, Northumberland,  
England)

Something over a year ago I sent in an account of my Elegants which, judging by correspondence I have received, seems to have been read by quite a number of members, so I am continuing the story in the hope that it will be of interest.

To recapitulate, I started with one pair in the autumn of 1946 received from Dr. Alan Lendon. Breeding results were :—

1947.—Nil.

1948.—Three.

1949.—Three plus three from the young hen of 1948 paired to one or other of her brothers. Total six.

1950.—Three pairs of breeders—three each from the two older pairs. Total six.

1951.—Still three pairs—Pair No. 1, three young ; pair No. 2, six young ; pair No. 3, nine young. Total eighteen.

1952.—As for 1951, except that pair No. 2 had seven young making the total nineteen.

And so to 1953 when the story is not so “elegant”, though it is none the less interesting. We had a wonderful spring in the north, which encouraged the birds to breed earlier than usual. Pair No. 1—the original Australians—laid their first egg on 1st April, as did pair No. 3, my most prolific pair. Pair No. 2's first egg appeared on 7th April—and the dates are significant because of what happened later.

Pair No. 3's four eggs were all the eggs I was able to see while the hens were brooding, because the other two hens always rushed back to their logs whenever I entered their flights in the hope of getting a peep at the eggs.

I did not record the date when I found that pair No. 3 had hatched their four young, but they were not more than a day or two old. Within another day or two I managed to look into the No. 2 nest and found only one young one alive, another dead, and a clear egg. Prepared to take a risk, I took out the young one, put a 1953 Budgie ring on it, and put it into the No. 3 nest along with their four. I cleaned out the No. 2 nest in the hope that they would go to nest again—which they actually did.

Then I began to reckon up dates and decided that it was long past time for pair No. 1. to have hatched. That evening I managed to get a look into the No. 1 log and found five eggs. This was new from the old Australians, which in the previous five years had never varied from having three eggs. But the lapse of time made me certain that



they were not going to hatch. I took out an egg, broke it, and, as I expected, there was a fully developed chick "dead in shell". I reached down, took out the remaining four eggs, and threw them in the dustbin. Imagine my consternation when I saw that three of the broken eggs contained *live* chicks, but the damage was done. Just too bad.

But worse was to follow. The next day I found hen No. 3 lying dead in the flight. I blamed cats, which are my real *bête noir*. On looking into the log I saw that all five young were alive, but would they survive long? They were little better than tiny pieces of meat covered with down. To cut a long story short the cock has reared all five, and they are as fine as any I have seen.

Pair No. 2 were slow in getting on with their second nest, but when I went abroad at the end of July they had three fully-feathered young almost ready to leave the nest. On my return towards the end of August there were two fine young ones flying about, the third having died after leaving the nest. Perhaps cats again. On looking into the log I found the remains of a fourth young one which had died at an early age.

I was not sure that the old pair No. 1 would attempt a second nest, but they did, returning to their normal practice of three eggs. This was new for them, because they had always been single brooded. Again something went wrong. I found two of the eggs broken and the third very dirty and "neglected" looking, so again I cleaned out the nest. This must surely be the end—but it wasn't. Just before I went away the old hen laid again!—a third attempt.

On my return I found this old hen a dreadful mess. She was plucking herself. But she had three well-developed young! Now comes a curious part of the story. This hen had always plucked her young—sometimes rather badly—so that they looked wretched when they left the nest though they all fully recovered from the disfigurement. This time when she has plucked herself she has scarcely touched the three young which are now flying like hawks, and are actually the wildest I have ever bred. That is a puzzle I have not solved—they are in the same aviary, have the same nesting log, and the feeding is the same as it has been since I got them seven years ago. But I prefer the hen to pluck herself rather than the young—if there has to be plucking.

So in spite of tragedies 1953 has provided ten young Elegants, which means that sixty-two have been bred here since 1948, which is not a bad record. And what are they like? I may be forgiven if I give you the opinion of a real expert.

A week or two ago I had a surprise visit from Dr. Alan Lendon—and I wish I had the space to enlarge upon the pleasure that visit afforded me. I was able to show him the original pair he sent me in 1946 with their three young, and all the others except one which had been sold, and he was kind enough to say that these birds are as fine



as any he has seen, even in the wild. I regard that as praise indeed, coming from one whose knowledge of Australian parrakeets must be second to none.

Dr. Lendon was not sure whether the birds he sent me were wild caught or bred by him. If the former—and he has promised to let me know when he returns to Australia and his records—it adds to the interest because it may add a year or two to the age of the old pair which have been so persistent this year. They are certainly seven years old, and may be considerably more.

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## COUNCIL MEETING

A Council Meeting was held on 11th November, 1953, in the Council Room, Zoological Society of London.

### OFFICERS FOR 1954

There were the following retirements and appointments :—

Council : Dr. W. C. Osman Hill, Mr. E. N. T. Vane, and Mr. O. E. Dunmore retired by seniority ; a fourth vacancy was caused by the death of the Duke of Bedford.

Mr. B. H. Dulanty, Mr. D. H. S. Risdon, Mr. Peter Scott, and Mr. T. R. Holmes Watkins were elected to fill the vacancies.

Editor : Miss P. Barclay-Smith retired according to rule, and being eligible was re-elected—for a fourth term of office.

Hon. Secretary-Treasurer : Mr. A. A. Prestwich retired according to rule, and being eligible was re-elected.

\* \* \*

Elected Hon. Fellow : Mr. Allen Silver.

Elected Hon. Life Members : Mrs. H. E. Dennis, Mr. R. J. Pickford, Mr. J. A. Swan, and Mr. W. H. Workman.

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### SOCIETY'S MEDAL

The Society's Medal was awarded to :—

Mr. H. J. Indge, for breeding the Red-sided Eclectus Parrot (*Lorius roratus pectoralis*).

Mr. E. N. T. Vane, for breeding the Moustache Parrakeet (*Psittacula alexandri fasciata*).

ARTHUR A. PRESTWICH,  
Hon. Secretary.



## LONDON ZOO NOTES

By JOHN YEALLAND

A Mantell's Kiwi (*Apteryx australis mantelli*), presented by the Government of New Zealand, arrived by air at the end of September. It travelled via Honolulu, San Francisco, and New York, receiving at each stop kind hospitality and refreshment in the form of earthworms.

Mantell's is the only Kiwi inhabiting North Island; three others live in South Island and a fifth on Stewart Island. Since 1851 some twelve Kiwis of four different forms have been kept in the Gardens, one of them living for just over nineteen years and one or two laying eggs.

Owing to its dislike of daylight, this present bird is being exhibited for twenty minutes only each day at 2.45 p.m.; it is, of course, very active at night.

Two Curlew Sandpipers (*Erolia testacea*), new to the collection; a Little Stint (*E. minuta*); a Turnstone (*Arenaria interpres*); a Little Ringed Plover (*Charadrius dubius curonicus*) and three Ruffs (*Philomachus pugnax*) have been presented by the Zoological Gardens of Copenhagen; Mr. J. Frodsham has presented one of the interesting Himalayan Black Bulbuls (*Microscelis psaroides*), and other gifts include two Indigo Buntings (*Passerina cyanea*); a Nonpareil Bunting (*P. ciris*); a Cuban Finch (*Tiaris canora*); an Olive Finch (*T. olivacea*); a King Parrakeet (*Alisterus scapularis*), and three young Barn Owls (*Tyto alba*). A Prairie Falcon (*Falco mexicanus*), new to the collection; two American Kestrels (*F. sparverius*); and a Cayman Island Parrot (*Amazona leucocephala caymanensis*) were deposited, and three Garnet-throated (*Eulampis jugularis*) and three Gilt-crested Humming-birds (*Orthorhynchus cristatus exilis*) were received in exchange.

Two Painted Quail have been bred at the Bird House; a Sonnerat's Jungle Fowl and three Masked Lovebirds have also been bred.

A regrettable loss is the Spix's Macaw after twenty-three years in the Gardens.

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## BRITISH AVICULTURISTS' CLUB

The fortieth meeting of the Club was held at the Rembrandt Hotel, Thurloe Place, South Kensington, S.W. 7, on Wednesday, 11th November, 1953, following a dinner at 7 p.m.

Chairman: D. Seth-Smith.

Members of the Club: Mrs. J. R. Alderson, Miss P. Barclay-Smith, B. Benedict, Miss K. Bonner, Mrs. V. M. Bourne, W. Brain, Captain A. Clarence, G. T. Clark, Mrs. G. T. Clark, T. R. W. Crewes, W. D. Cummings, P. L. Dabner, Mrs. I. Darnton, B. H. Dulanty, O. E.



Dunmore, A. Ezra, Miss S. A. Fothergill, J. C. Garratt, T. Goodwin, F. Grant, H. J. Harman, Dr. E. Hindle, G. T. Iles, H. J. Indge, F. E. B. Johnson, Dr. R. S. Kirk, Miss E. M. Nobel, Miss M. H. Nobel-Harman, Dr. F. B. Lake, P. H. Maxwell, G. S. Mottershead, S. Murray, K. A. Norris, S. Porter, A. A. Prestwich, D. M. Reid-Henry, R. C. J. Sawyer, P. Sutton, E. H. Tong, E. N. T. Vane, C. H. Wastell, Mrs. J. Wheatley, H. Wilmot.

Guests : Mrs. M. E. Albany, Miss A. M. Alderson, M. R. Alderson, Dr. K. W. Aylwin-Gibson, J. Bailey, P. S. Bates, Miss A. I. Batho, W. Bird, Mrs. W. Bird, B. E. Bransden, S. A. Croucher, Miss D. Dabner, W. J. C. Frost, Miss H. Gentry, Miss S. Goodwin, Mrs. F. Grant, N. Hoskins, Mrs. N. Hoskins, Miss S. Indge, H. Ingram, Mrs. H. Ingram, M. A. Lake, Dr. A. Lendon, H. M. Luther, Mrs. N. Masters, Mrs. R. Maurice, Mrs. S. Murray, Mrs. D. Seth-Smith, Mrs. P. Sutton, Mrs. E. H. Tong, Mrs. C. H. Wastell, Professor J. Wheatley, Miss M. White, Mrs. H. Wilmot, A. J. Woods.

Members of the Club, 44 ; guests, 35 ; total, 79.

Members and guests stood in silence for a few moments as a tribute to the memory of Miss Ethel Chawner and of the Duke of Bedford.

Before introducing the speaker for the evening the Chairman presented the Society's Medal to H. J. Indge, for breeding the Red-sided Eclectus ; and to E. N. T. Vane for breeding the Moustache Parrakeet.

In his inimitable manner E. N. T. Vane gave a brief outline of the trials and tribulations likely to be experienced by the would-be bird photographer.

He then showed a selection from his collection of Kodachrome transparencies to illustrate "Parrots in England To-day". It is probable that at present the Order Psittaciformes is represented in English collections by about one hundred and forty species. Now that the parrot ban has been reimposed it is highly improbable that some of these will ever again be seen alive in England. It is Vane's intention to build up as complete a photographic reference library as possible. He would be glad to have information concerning the whereabouts of rare species.

About seventy species and varieties were shown. Some of the more interesting were the lutino Blue-fronted Amazon, Hooded, blue Indian Ring-neck, and yellow Blossom-headed Parrakeet at Woburn ; Raymond Sawyer's Lear's Macaw ; Pat Maxwell's Pesquet's Parrot ; the White-bellied Caiques at "Darenth-Hulme" ; the Kea at the London Zoo ; and Edward Vane's Moustache Parrakeet family group.

The exhibitor is to be warmly congratulated on the very high standard attained, and the audience signified by its applause that it



fully appreciated his efforts. It is to be hoped that it will be possible for a further selection to be shown at a later date.

Many members do not appear to appreciate the importance of the meeting notice post cards. At most of the dinners there are numerous members who have not expressed their intention either to be present or to bring guests. To enable the Secretary to complete the organization of the dinners intending diners **MUST** return their cards on or before the stated date.

The next meeting of the Club is on **13th January, 1954.**

ARTHUR A. PRESTWICH,  
*Hon. Secretary.*

\* \* \*

## NEWS AND VIEWS

H. J. Indge has repeated his success of last year in breeding the Red-sided Eclectus. This year two young ones were hatched ; one died after two or three weeks, but the other, a female, was successfully reared, partly by hand.

\* \* \*

Percy Glover writes that he has visited the New Zealand Government trout and pheasant hatcheries, near Ngongotaha. Amongst the birds there are two Wekas, believed to be a pair, which the curator hopes will breed.

\* \* \*

Darenth-Hulme, 1953. Later news : a Lineolated Parrakeet (*Bolborhynchus lineola lineola*) has been successfully reared ; the nest also contained three eggs with fully developed chicks. This is believed to be the first since Miss M. E. Baker's near success in 1913. The Triangular-spotted Pigeons eventually reared two young ones.

\* \* \*

Dr. D. S. Newill has been elected President of the American Pheasant Society in succession to Dr. G. A. Allen. Dr. Newill has many avicultural and ornithological achievements to his credit, possibly the best known being his successes in bringing the Ocellated Wild Turkey and the Emperor Goose into the United States.

\* \* \*

Arthur Lamb reports at the end of September that his young hybrid Blue-fronted Amazon  $\times$  Yellow-cheeked Parrot "is now eating seed, and will take a nut from me and eat it, so that we can say that it is now independent of its parents. It is a very big bird and is flying well. At first I thought it very clumsy, but within a week it was able to land on any perch without falling off".

\* \* \*



F. H. Rudkin, Sr., writes : " Have you noticed the colour change of the beaks of young Derbyan Parrakeets ? When they first leave the nest they all have red beaks. Then after about three weeks they all turn black. But at or about their first moult the young males' beaks turn red like their male parent, and the females' beaks remain black like their mother's.

I had a pair of Valley Quail in an aviary. The hen laid about twelve eggs and then died. The cock took over and sat for about twenty days. He brought off eight chicks and has cared for and brooded them well."

\* \* \*

The trapping pool in St. James's Park is now being operated and ringing is progressing in earnest. It is the aim to ring all the ornamental wildfowl in the Park, including those which are pinioned. The birds caught so far have been pinioned, but these are being ringed for record purposes. The full-winged offspring of the pinioned stock continues to elude capture but there is now a much better chance of catching them. The Society's special blue rings are used by the Bird Sanctuaries Committee, Ministry of Works. Ring size 4 is usually recommended for Pintail, but the Birdkeeper, our member W. H. Punter, has found size 3 a better fit, moving freely up and down the tarsus.

\* \* \*

C. af Enehjelm writes : " My young Black-crested Finch (*Lophospingus pusillus*) hatched 4th May died suddenly on 29th July, a big disappointment. I still have a youngster hatched 6th July. A nest of two hatched later died when six days old. The hen is sitting again, for the fifth time, on two eggs. I have bred seven Red-headed Parrot Finches, five and two. The hen is at present sitting on four eggs. A pair of Bichenos' Finches had six youngsters in their first nest, and now have four small young ones. I have bred about a dozen Cherry Finches (*A. modesta*) from two pairs. Parrotlets (*F. passerinus*), one pair has produced seven and seven, and another pair two and three."

\* \* \*

Captain R. W. Veitch sends news of his Alexandrine Parrakeets : " My seven-year-old pair this year reared four very good young. This is the first time I have had four in a nest. Most broods have been twos with occasional threes and I have bred them almost without a break for 18 years. The strain is a very good one and the birds are much bigger than imported birds. They have never shown any sign of attempting a second brood, and the young birds stay in the nest until almost as large as the parents, but only grow the two long central tail-feathers after they leave the nest. My twenty-two year hen is still well but laid no eggs this year."

\* \* \*



An Exhibition of Nature Photography organized by The Royal Photographic Society as part of its Centenary Year celebrations, will be shown in the Society's house at 16 Princes Gate, London, S.W. 7, from 1st to 22nd December, 1953.

It will comprise prints and transparencies, in monochrome and colour, and stereoscopic exhibits, of mammals, birds, fish, reptiles, insects, flowers—and other forms of natural life, contributed by most of the outstanding nature photographers. The exhibition is open from 9.30 a.m. to 5.30 p.m. (Saturday 5 p.m.) but not on Sundays. Admission is free.

A. A. P.

\* \* \*

## REVIEWS

MENABONI'S BIRDS. By ATHOS and SARA MENABONI. Michael Joseph, Ltd., London, 1952. Price 84s. net.

This book on American birds is beautifully presented and automatically falls into the class of books suitable for handsome gifts. There are no less than thirty-two plates in colour, thirteen in black and white, and a large number of smaller black and white illustrations. The originals of these have been loaned by the owners, private collectors, the National Audubon Society, the American Museum of Natural History, and the Kennedy Galleries, and were chosen as the best examples of Menaboni's work.

The book opens with an introduction giving the life story of Athos Menaboni and his wife Sara, both of whom, Italian born, migrated to America where they met, and tells of their early struggles throughout which a passionate love of birds predominated. The rest of the book is written by Sara Menaboni, who relates in diary form the experiences of herself and her husband with birds and beasts. Mrs. Menaboni gives her impressions and opinions in a light conversational style, and includes many personal details.

The majority of species depicted are not familiar to European readers, but the Mallard, Pintail, and Ring-necked Pheasant are of course similar to the European birds, and the Wood Duck, more commonly known in Britain as the Carolina, and Canada Goose, are both well known.

A brief description of the bird is given on the back of each colour plate, and similar descriptions of the black and white plates are found at the end of the book.

The reproductions of both colour and black and white plates have achieved a beautiful softness of tone, but some are not so successful as others.

P. B. S.



DIE GEFIEDERTEN : DAS SCHOENE LEBEN DER VOGEL (The Feathered Ones : the Beautiful Life of the Birds). By RICHARD GERLACH. Illustrated. Fifth enlarged edition. 1953. 401 pages. Hamburg : Claasen Verlag. DM. 16.80.

On rare, much too rare, occasions there comes to the desk of this reviewer a book on birds whose author, very fortunately, combines a keen knowledge of his subject-matter with an equally keen command of language. The result is a piece of writing which at once brings the reader not only much useful and often little-known information but also information clothed in a style of writing which is a delight to read—again and again.

Such book is the present volume—without question a work of art, not likely ever to get out of date simply because it presents the truth as the author sees it—accurately, spiritedly, charmingly. The book is filled with highly individualized observations of bird life in all its fascinating phases, mostly European birds, but also some foreigners. There is nothing commonplace or trite about either Gerlach's observations or his writing. With special enthusiasm I read his fascinating commentary on the songs of birds. I recall not a single bird book in recent years which equals Gerlach's in point of piquancy and charm of style. The American book which comes nearest to it in quality of style and in keenness of observation and description is Dawson's *The Birds of California*—a classic in its own right.

There are no dry-as-dust technical descriptions burdening Gerlach's work ; every page in it sparkles with a delightful liveliness as it tells the reader about habits, songs, and numerous other activities of birds. Later sections in the book are devoted to bird migration ; and one of the most informative, rarely found in bird books, is the one devoted to biographical sketches of eminent bird students, such as Bechstein, the Brehms, Heinroth, and others.

If you read German at all, be sure to add this book to your library. It's the sort of thing you will want to read at least once a year, if not more often.

CARL NAETHER.

\* \* \*

## NOTES

### BENGALEE × CORDON BLEU HYBRIDS.

Although both Weaving Finches, *Uroeginthus* and *Munia* are well apart, nevertheless hybrids between birds of these two genera have been proved possible. A Mr. G. Johnstone residing at Tenterden (Kent) had hybrids arise from the mating of a male fawn and white Bengalee and a female Cordon Bleu. No birds, other than Canaries and a pair of Zebra Finches were in the enclosure. As far as could be observed the Bengalee appeared to undertake not only most of the feeding, but a large share of the incubation. Five eggs were deposited, and four were hatched



apparently on consecutive days. One died at 11 days, and another at 42 days, which was sent to me, and is still preserved in spirit. It is a small darkish brown bird with white chin and a few white feathers at the edge of one wing, otherwise at this period it resembled a very large dark brown juvenile Cordon Bleu without blue. The form of mandibles and tarsi and elongated appearance favoured this bird rather than its male parent. Regarding the two remaining birds, I understand that later they became more like Bengalees and the male survivor showed a reddish-purple patch on the cheek.

A. SILVER.

\* \* \*

## CORRESPONDENCE

### A TUDOR BIRD-CAGE

Several readers have very kindly sent me suggestions regarding the bird most likely to have been kept in this cage. In appearance it is said to bear a resemblance to a West of Ireland lark cage, and this is probably the most likely species.

My special thanks are due to the editorial staff of *Country Life* who went to a great deal of trouble in this matter. I am informed that there is a well-known picture of a Goldfinch by Carel Fabritius, painted shortly before his death in 1654. The bird is shown, not in a cage, but perched on a box to which it is attached by a long chain from one of its legs. It is suggested that possibly the example under notice was more in the nature of a bird-box, to which the bird retired at night, being let out on a chain during the day. In the old days it was apparently not uncommon for birds to be kept in this manner.

A. A. PRESTWICH.

61 CHASE ROAD,  
OAKWOOD, N. 14.

### BREEDING PARROTLET HYBRIDS

Referring to the article by J. Dalborg-Johansen entitled "Breeding Parrotlet Hybrids", which appeared in the September-October issue of the *AVICULTURAL MAGAZINE*, he says: "It seems to me that the hens of both pure species and the hybrids are all alike."

The differences (other than those of plumage) mentioned by Neunzig are as follows:—

Blue-wing Parrotlet: Length, 120 mm.; beak, whitish; feet, blackish grey; eyes, grey to dark brown.

Emerald-rumped Parrotlet: Length, 130 mm.; beak, whitish; feet, flesh-coloured; eyes, brown.

He further mentions a subspecies (*Psittacula deliciosa* Ridgw.) which is smaller (120 mm.) and of a brighter green. The birds I bred (see *AVICULTURAL MAGAZINE*, September, 1926) certainly were *not* larger than Blue-wings and must have belonged to this subspecies. They came from Dutch Guiana and their pink legs definitely enhanced their beauty.

H. WILDEBOER.

"BURNBRAE," HOLDERNESS ROAD, HULL.



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## LIST OF EXCHANGES AND PRESENTATIONS

Members are reminded that the publications presented or received in exchange are deposited in the Library of the Zoological Society of London, Regent's Park, London, N.W. 1.

- |               |   |   |
|---------------|---|---|
| Great Britain | . | <i>British Birds, Cage Birds, The Ibis, Our Zoo News</i> (Chester Zoological Gardens).  |
| Australia     | . | <i>Australian Aviculture</i> (official organ of the Avicultural Society of Australia and the Avicultural Society of South Australia).<br><i>The South Australian Ornithologist.</i>   |
| Belgium       | . | <i>Le Gerfaut, Le Monde Avicole, Natuurwereld, Ornithologie, Zoo</i> (La Societé Royale de Zoologie d'Anvers).  |
| Denmark.      | . | <i>Dansk Ornithologisk Forenings Tidsskrift, Stuekultur.</i>  |
| France        | . | <i>L'Oiseau, La Terre et la Vie.</i>  |
| Germany.      | . | <i>Die Gefiederte Welt, Die Vogelwarte, Die Vogelwelt, Ornithologische Abhandlungen, Ornithologische Berichte, Ornithologische Mitteilungen.</i>  |
| India         | . | <i>The Indian Aviculturist</i> (Journal of the Indian Bird Fanciers' Club of India).  |
| Netherlands   | . | <i>Ardea, Onze Vogels.</i>  |
| South Africa  | . | <i>The Bokmakierie, The Ostrich.</i>  |
| Sweden        | . | <i>Vår Fågelvärld.</i>  |
| Switzerland   | . | <i>Der Ornithologische Beobachter</i> (Offizielles Organ der Schweizerische Gesellschaft für Vogelkunde und Vogelschutz).   |
| U.S.A.        | . | <i>America's First Zoo</i> (Philadelphia Zoological Gardens), <i>Animal Kingdom</i> (New York Zoological Society), <i>The Auk, The Condor, The Pheasant Fanciers', Gamebreeders', and Aviculturists' Gazette, The Wilson Bulletin, Zoologica.</i> |
| Yugoslavia    | . | <i>Glasnik</i> (Journal of the Ornithological Institute, Zagreb).   |



### CANDIDATES FOR ELECTION

- L. BIRD, 70 Blaketown, Seghill, Northumberland. Proposed by I. Baty.
- Dr. P. BUNTON, "Elim," P.O. Addo, Cape Province, South Africa. Proposed by J. H. Walmsley.
- T. CARLSSON, Skolgatan 9, Malmberget, Sweden. Proposed by Miss K. Bonner.
- Dr. R. H. DOMINGUEZ, Box 447, Utuado, Puerto Rico. Proposed by Miss K. Bonner.
- G. W. FAIRIE, 76 Stirling Road, Tullibody, Clackmannanshire, Scotland. Proposed by Miss K. Bonner.
- N. HOSKINS, 69 Hewens Road, Hillingdon, Middx. Proposed by E. N. T. Vane.
- W. G. HUNT, 26 Middle Street, Brixham, Devon. Proposed by K. J. Smith.
- Miss D. A. JAKOBSSON, Summerlands Cottage, Ferndown, Wimborne, Dorset. Proposed by J. Yealland.
- B. JØRGENSEN, International Zoo Library, Zoo-Centret, Lyngby, Denmark. Proposed by A. A. Prestwich.
- W. F. KINGSLAND, Redding, Connecticut, U.S.A. Proposed by J. W. Livermore.
- F. KRAUS, Neuried 1, Muenchen 49, Germany. Proposed by A. Hampe.
- V. P. LANCE, Route No. 3, Denison, Texas, U.S.A. Proposed by Miss K. Bonner.
- D. OVERLÄNDER, Austrasse 17, Bad Honnef/Rhein, Germany. Proposed by A. A. Prestwich.
- Mrs. H. F. Reed, 2312 South Buckner Boulevard, Dallas, Texas, U.S.A. Proposed by G. A. Gjessing.
- E. REYNAL, 221 East 49th Street, New York, N.Y., U.S.A. Proposed by Dr. S. D. Ripley.
- T. E. SMART, Castlemead, Tenbury Wells, Worcs. Proposed by P. B. Partridge.
- H. A. SNAZLE, M.B.E., Chessington Zoo, Ltd., Leatherhead Road, Chessington, Surrey. Proposed by Miss K. Bonner.
- J. M. SPENCE, "Jenh," Woodley Road, Plumstead, Cape Town, South Africa. Proposed by A. A. Prestwich.
- H. TEMBLETT, c/o Springfield Colliery, P.O. Redan, South Africa. Proposed by W. R. Carthew.
- J. M. VADEN, 2533 South 3rd Street, Abilene, Texas, U.S.A. Proposed by W. B. Frostick.

### NEW MEMBERS

The seventeen Candidates for Election, proposed in the September-October, 1953, number of the AVICULTURAL MAGAZINE, were duly elected members of the Society.

### CHANGES OF ADDRESS

- M. F. BENDER, to 458 Boon Street, Cadillac, Michigan, U.S.A.
- W. GRAY, to 4 Windsor Close, Trowell, Notts.
- W. J. GROUND, to "Albion House", 61 Pinchbeck Road, Spalding, Lincs.
- C. T. RIDLEY, to Birdwarren Farm, Varsity View P.O., Charleswood, Manitoba, Canada.
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# THE AVICULTURAL MAGAZINE

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THE AVICULTURAL SOCIETY OF  
AMERICA

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PHYLLIS BARCLAY-SMITH, F.Z.S.

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LINEOLATED PARRAKEETS.



# AVICULTURAL MAGAZINE

THE JOURNAL OF THE AVICULTURAL SOCIETY  
AND THE AVICULTURAL SOCIETY OF AMERICA

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JANUARY-FEBRUARY, 1954

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## BREEDING OF THE LINEOLATED PARRAKEET

(*Bolborhynchus lineola lineola*)

By A. A. PRESTWICH (Southgate, England)

The Lineolated or Lineated Parrakeet—possibly Barred Parrakeet is preferable—was first described and named *Psittacula lineola* by Cassin in 1853.

It appears to be by no means a common species, though of wide range: Peters gives its distribution as "Subtropical zone in the mountains of Central America from southern Mexico to western Panama", but being such a inconspicuous little bird it might easily be overlooked.

Very little seems to have been written about this parrakeet and what little has tells us almost nothing respecting its habits in the wild state.

O. Salvin (1871) writes: "Mr. Godman and I discovered a small flock in the Volcan de Fuego [Guatemala] at an elevation of about 8,000 feet above the sea-level. We saw them in a tree overhanging the track to Acatenango, above the Indian huts of Calderas, and succeeded in securing three of four specimens before the rest took fright and flew away."

Emmet Reid Blake (1953) in his recently published work, merely says: "A rare bird in Mexico, this species occurs only in dense forests at high altitudes."

This parrakeet has been imported spasmodically in small numbers. The Zoological Society of London received its first example in 1886; followed by two in 1889, and a fourth in 1895. Since then there have, of course, been a few others, and a couple or so were added to the collection during 1951-52.

Mr. D. Seth-Smith had a pair at one time, and writes: "It is somewhat delicate, and should never be subjected to a lower temperature than 60° Fahr." The Duke of Bedford says the same, but I believe



he is merely repeating Mr. Seth-Smith's observation and that it was not based on his own experience. The present writer wintered (1926-27) a pair in an unheated, well-sheltered aviary in the New Forest ; and last year two pairs were not taken in until mid-November, by which time there had been two or three light frosts. All last winter Mr. Vane kept a pair in an unheated bird-room and on several occasions the drinking water was frozen—they suffered no ill-effects. Mr. Norris, on the other hand, has two pairs that show signs of extreme discomfort when subjected to even a slight reduction of normal temperature. These experiences are somewhat inconsistent and it is perhaps best to play for safety and to take them in at the first sign of frost.

The plumage is not identical in the sexes, as is generally stated. The female is slightly smaller than the male and appears to be stouter in build. The rump is less strongly spotted with black ; all the black edges to the feathers are narrower, especially of the lesser wing-coverts ; the tail is wholly green, the feathers not being broadly tipped with black as in the male ; the beak hardly differs in form.

The Lineolated is slightly crepuscular in habits. In daytime it is usually quiescent, and "freezes" for long periods. It frequently perches lengthways on branches, and one is irresistibly reminded of a miniature Nightjar. It may be said to creep rather than walk : I do not remember ever seeing this bird actually walking on the ground. It is not generally realized how many psittacines prefer to sleep hanging head downwards ; the Lineolated decidedly has this preference.

During late 1951 and early 1952, possibly thirty pairs were imported. I rather fear that only about five or six survive to-day. Three pairs were secured for the "*Darenth-Hulme*" collection ; one pair died within a few days, but the four survivors did well and were put in an aviary from late spring until late autumn. Both pairs took possession of lovebird nest-boxes, but I think merely for use as dormitories, at any rate they made no attempt to breed.

On being returned to their aviary in 1953, both pairs immediately re-occupied nest-boxes. On several evenings both pairs were seen to indulge in what was apparently a form of courtship. A pair would stand facing one another, stretch vertically to the fullest possible extent, and with beaks interlocked remain in this position for a few moments. On no occasion was coition observed. This display gave cause to hope that one pair at least would nest in earnest. Owing to the secretive nature of these birds it was decided that should they nest it would be best to leave them entirely to their own devices, and not to interfere with their nesting in any way whatsoever. Consequently, it was not possible to determine the incubation period or to note the colour of the nest down.



One pair had four eggs but only hatched one ; the other three contained well-developed embryos. The parents, having only one young one to look after, reared it remarkably well. The young one, a male, is fully as large as its parents. The colour is rather paler than in an adult, the markings are less distinct, and there is a slight bluish tinge on the head.

The other pair had five eggs which they eventually deserted, when it was found that three were fertile and two clear. The nest-boxes had about an inch of peat moss placed in the bottom, otherwise the nests consisted of nothing apart from a few feathers.

These charming little parrakeets do very well on a mixture of canary, white millet, oats, and a little hemp. Soaked millet sprays are greatly relished, and soft, sweet apple is an essential part of their diet.

It is believed that this is a first *complete* success. Miss M. E. Baker, of Loughborough, had a young one leave the nest in 1913, but it was accidentally drowned. It is a little doubtful that it was fully independent of its parents and the event is usually considered an incomplete success.

Any member or reader knowing of any other breeding of this species in Great Britain or Northern Ireland is requested to communicate at once with the Hon. Secretary.

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\* \* \*



## NEWS FROM MY AVIARIES IN AMERICA AND EUROPE IN 1953

By J. DELACOUR (Los Angeles, California, U.S.A.)

One season has now elapsed since I gave an account of my Los Angeles aviaries. Some birds have been reared and new ones have been added. It was too early to expect anything from the ducks or the Palawan Peacock Pheasants, but a few Harlequins and Painted Quails have been reared by the parents. A pair of Diamond Doves produced five pairs of young, while only one young of the silver variety was raised ; there are also three young Mountain Witches, one Bartlett's Bleeding-heart, eight Brush Bronze-wings, all from one pair, and three Pigmy Doves. Interesting species have recently been added : Blue-headed and Ruddy Mountain Pigeons, from Cuba ; Moustache and Martinique Ruddy, the former never imported before, I think, and very attractive, as well as scarce in the West Indies, and some lovely Jobi Ground Pigeons from New Guinea, which used to breed so well at Clères.

Among the passerine birds, four Painted, three Bichenow's, and eight Long-tailed Grassfinches, three Diamond Sparrows, and two Cuban Finches were reared ; one pair each of grey, silver, and white Zebra Finches raised over forty young.

I keep adding a number of species to my small collection, and naturally I have had to build six more aviaries near the top of the garden : a block of three, each 11 × 5 feet ; another one of three, 9 × 3 feet. These useful little pens have a good shelter open to the south, and prove excellent. One contains various weavers, Parson, and Zebra Finches, a pair of Ruddy Mountain Pigeons, one of Peruvian Ground Doves, and Australian Swamp Quails. The next two are inhabited by various Australian finches, a pair of Yellow-winged Sugar Birds bred in a canary cage at the San Diego Zoo ; a pair of silver Diamond Doves, Blue-headed Pigeons, and Painted Quails. The three smaller compartments are dedicated to Gouldian Finches and Plumed Ground Doves ; Budgerigars of uncommon varieties, most of them from Clères, Mearn's, and Harlequin Quails, and Bleeding-heart Pigeons.

Some nine species have been added to the large flight over the stream ; a trio of Imperial Pheasants, reared in 1953 by Mr. Mackensen, who keeps a breeding pair for me ; a pair of the rare Hawaiian Ducks, kindly sent by Mr. Paul Breese, Director of Honolulu Zoo, four South African Jacanas, a pair of Hartlaub's Touracous, a Long-tailed Glossy Starling ; Australian Zosterops, Japanese Varied Tits, Australian Lapwings, Blue Scaly Quails, and a few other birds have been placed into other aviaries.



Circumstances have prevented this year my usual visit to Europe, but according to Mr. Fooks's reports, the birds at Clères are flourishing. A number of new species have been added, including Ocellated Turkeys presented by the San Diego Zoo, rare waterfowl, pheasants, doves, parrakeets, and small birds. The collection there is now reaching its old standard. All the birds which I rear in California, and others presented by friends, are finding their way to Clères, while some have been purchased in Europe, in Africa, Australia, and in South America. Quite a number of young have been reared at Clères in 1952 and 1953, among which are Rheas, Spicifer, and other Peafowl; Siamese Firebacks, Mikado, Edwards', Swinhoe's, Horsfield's, Cheer, Bel's, Blue and Brown Eared Pheasants, Red and Sonnerat's Junglefowl; Blue and Greater Snow, Cereopsis, Magellan, Ashy-headed, Blue-winged, Egyptian, and Orinoco Geese; South African and Common Sheld-Ducks; wild Muscovies; Mandarin and Carolinas; American and Chiloe Wigeons; Shovelers, Pintails, Bahamas (including a white one), Gadwall, Cinnamon and Chilean Teal, American Black Ducks, Red-crested Pochards, Red-heads, etc.; Wongawonga Pigeons, Green-winged, Bronze-winged, Senegal, Peruvian Ground, Bar-shouldered, Diamond Doves; many Fischer's and some Masked Lovebirds, and a large number of pied and other Budgerigars.

An imported pair of Black-necked Swans, after four years, nested in August, but failed to rear the two cygnets hatched.

Considering the difficulties of the present time, the comparatively small staff, and the disturbance caused by tens of thousands of visitors, such results are quite satisfactory.

\* \* \*

## BREEDING OF THE CROWNED WOOD-PARTRIDGE

(*Rollulus roulroul*)

By IR. F. J. APPELMAN (Rotterdam, Holland)

The hen of the pair that lives in one of the aviaries in the big Hothouse at the Rotterdam Zoo "Blijdorp" (see AVICULTURAL MAGAZINE, Vol. 59, No. 5—September–October, 1953), laid six eggs in a small hole under some stones, four of which were fertile.

A small bantam foster-mother spoiled two eggs, but of the other two which were brooded in the incubator, one chick was hatched, which afterwards proved to be a cock.

From the beginning the little fellow was very vigorous and bullied a much bigger bantam-chick that was given him as a companion. He was fed in the same way as newly hatched pheasants and thrived.

He has become a very beautiful proud young cock, with a fine red crest on his little head.



## THE BEARDED BARBET

*(Pogornorhyncus dubius) (?)*

By H. A. FOOKS (Burwash, Sussex, England)

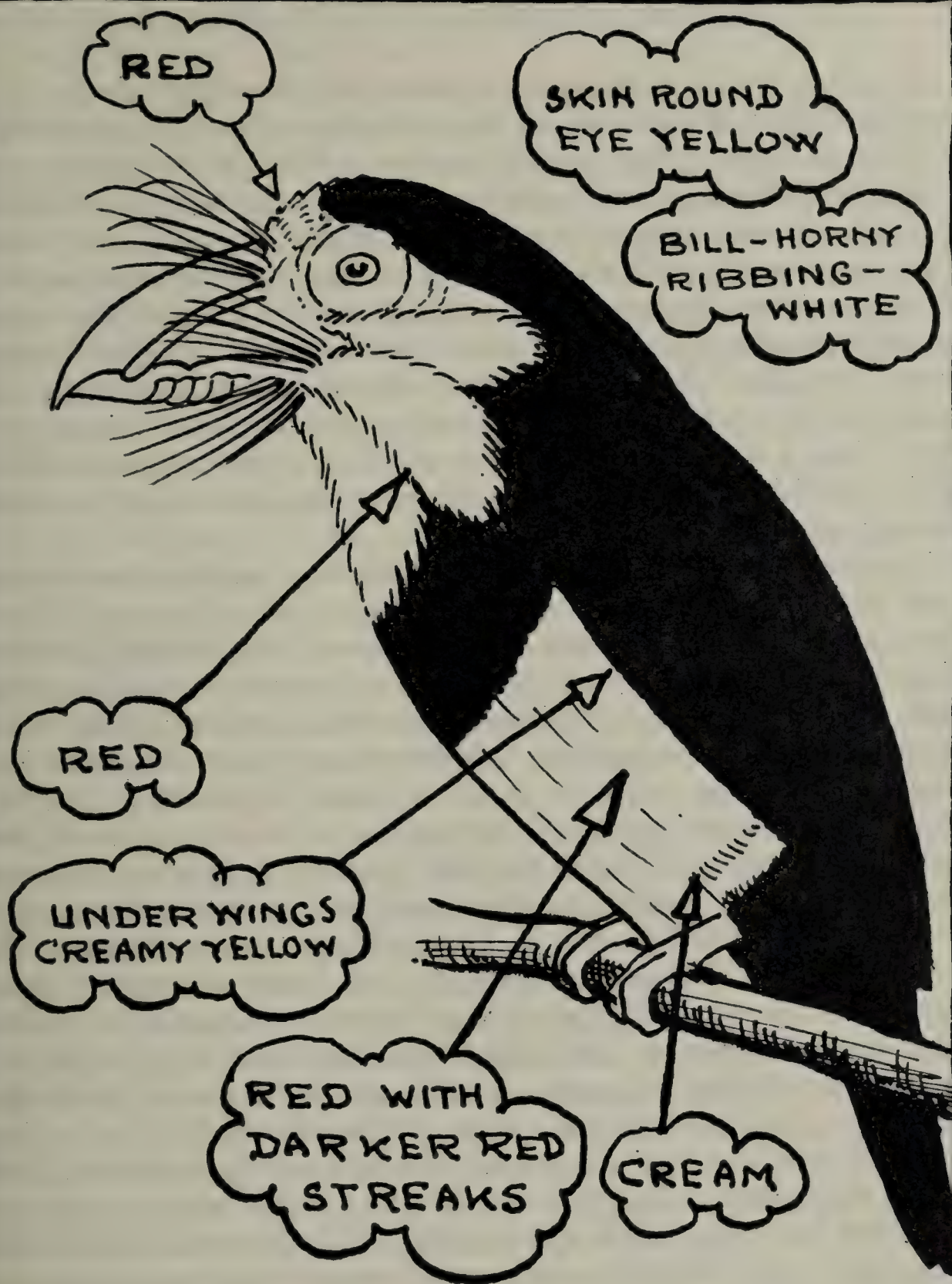
I unfortunately do not possess a copy of Bannerman on West African birds, but from notes made from the books when I was in Nigeria, the description did not tally with my own observations of birds which were found between Kaduna and Jos.

The description (it may not have been Bannerman) was that the entire top of the head, back, and wings were black, while the birds I saw had a red patch on the forehead and a thin bar of red on the secondaries. These markings are, however, only supposed to apply to the Saw-toothed Barbet. The latter lacks the amazing bristles which decorate the base of the bill of the Bearded so that it would be difficult to make an error in identification.

The impression of the bird in flight is red and black, very noticeable against the green foliage of the trees, though occasionally they may be seen making a brief visit to the ground. They do not seem to flock and are normally seen in pairs or singly. From my hut I could sometimes see as many as half a dozen pairs, though they became scarce directly the particular fruit on which they had been feeding ceased to be available in fair quantities. I managed to obtain several young from the nest and found them easy to rear on bread and milk and Mellins Food mixed with an equal measure of mashed banana. As soon as the feathers commenced to sprout a few termites were added to their hourly feed, these were increased as the birds grew and the bread was proportionately lessened. It was noticeable that as soon as the termite ration was for any reason lessened, the young birds showed signs of decline. Several old birds which I kept invariably swallowed whatever was fed them without making any attempt first to break it up, regardless of the size of the piece. Their contortions in swallowing any outsize fruit was strangely reminiscent of Charlie Chaplin swallowing a piece of dry bread or something he did not much fancy. I frequently saw these birds searching the flowers of the cotton trees though whether for insects or nectar could not be determined. The crops of some birds contained a large proportion of insects and included large beetles from which the wing cases had not been detached. Judging by the size of these insects it would appear that they had been taken deliberately.

The size and power of these birds' beaks is out of all proportion to the use to which they could be put and I can assign no particular use to the outsize bristles in spite of spending hours with both binoculars and telescope watching them feeding. The sketch is from a live bird which I had for some time and which I had to release as no livestock was allowed on the plane.





THE BEARDED BARBET

H. FOOKS-53.



## ABOUT MY AVIARIES

By GUST. A. GJESSING (Drammen, Norway)

Everyone I talk to is surprised when they hear that I keep a fairly large collection of birds, mainly Australian Parrakeets, in outside flights in Norway, which, most people appear to think is the border to the North Pole! But, as many English aviculturists who have read *Cage Birds* through the years know, I have now worked at the hobby in Norway since 1934, and have had fairly good results. What losses I have had, have never been because of the weather, but mostly have been caused by my own inexperience and lack of knowledge as to what to do in time of trouble. I have remedied this by bothering eminent aviculturists the world over with a lot of questions. I know to-day a lot more than I knew, and have this year built new quarters for my birds, and this is what I intend to tell my colleagues in the Avicultural Society about.

The war put a stop to my bird-keeping for a while. I experienced a lot of changes and ended up by buying the new property "Woodberry Hill" here in Drammen. As soon as I had moved I set about planning a new aviary, and last October began to write to all the aviculturists I knew in England, Australia, Germany, and U.S.A., in order to obtain suggestions and experiences from them, so that I could get my new aviary as near the ideal as possible. I built a structure 10 metres long and 3 metres wide from two layers of wood panelling boards, and insulated with glass-wool, which was encased in tarred paper. I used glass-wool because it is 100 per cent vermin proof. Plenty of windows in the front of the house, and flights facing south, the back wall facing north, and the whole very nicely located inside small woods, which are a good protection against the weather. The entrance holes to the flights I placed down by the ground—against the advice of many aviculturists, but knowing that warm air goes up and cold air stays down, I figured that the further down the holes were the more warm air I would conserve in winter. I will admit that it took a long time to train the birds to use these entrances regularly, but I succeeded, and now they all do so without any trouble. The flights were built in compartments, each compartment to accommodate one breeding pair of parrakeets.

In the middle of the "battery" of compartments, I built a large one intended to hold possible young birds. The house, as I have stated, was 10 metres long. At the end of this house I built a large open flight without a connecting inside flight, 7 yards by 1.1 yards, where this summer I have had a pair of Roseate Cockatoos. The inside flights are 1.1 yard by 1.7 yard, and all compartments, inside and outside, are about 3 yards high. For netting I have used the strongest



one can buy in half-inch mesh. All compartment walls are double to avoid biting of feet and beaks through the netting. Outside netting walls are double to keep out cats and other animals, only the front is single to allow a good view.

The aviary is so placed that I can see it from all the important windows in the main house. I use fluorescent lighting, two lamps each of 40 watts. This can be turned on and off from the main house. Around the bird aviary I have planted many hundreds of beautiful and strange mosses and other plants, collected in the woods of Norway and moved into my place. I wanted the whole thing to be original and beautiful, and have so far been more than lucky. From the road there is a special entrance into the rockery where the aviary is located. This has been planted with nice small junipers so as to look like cypresses. Between the junipers I have nice young heather, and between the heather lots and lots of field flowers, the names of which I do not know in English. There are bluebells, red, white, yellow, and lilac flowers and some dwarf ferns. A basin I have made in front of the aviaries out of granite blocks, surrounded by nature-stonework, is also planted with strange rare mosses which bloom crimson, white, yellow, and blue. Surrounding the basin are the only cultivated plants in the whole garden, some Kamus lilies, tall ferns, and flowers in various colours, spirea and water-swordgrasses. In midsummer the whole thing looks like a colourful painting. I must here admit—I have not done this by myself, a friend, artist and sculptor, planned the whole thing, and we have done the work together. I did not want to employ strangers to do it, because the real art would then not be the same as when you do it with your own hands. A lot of love for God's nature lies in this arrangement.

Above the aviaries I have built a large stone terrace from loose stones and planted colourful flowers among the stones. The top of the terrace, which is about 25 yards square, is a lawn. In the corner, right up against the house, I have planted an aviary, made from rustic birch, with colourful berberis bushes. There the Australian finches belonging to my wife will go in summer. This aviary is  $3\frac{1}{2}$  by  $3\frac{1}{2}$  yards and 3 yards high. There is a window into the cellar (my cellar lies above ground), and inside in the cellar I have partitioned off and made a bird-room where I have two flights. One is connected with the finch aviary,  $2\frac{1}{2}$  by  $2\frac{1}{2}$  yards by  $2\frac{1}{2}$  yards high, and the other somewhat smaller is intended to house a pair of *Ara severa* during winter. In the summer I will keep it for eventualities.

In this bird-room I have my feed, a work-bench, shelves with my mealworm boxes, and a battery of cages of the type in England called "Budgie breeding-cages". I use them for quarantine for new arrivals and possible young ones, should I get more than I can



accommodate in other places. It is always good to have some reserve place.

With the kind help of many of our members in the Avicultural Society, and with special thanks to the Hon. Secretary, Mr. Prestwich, for his helpful assistance, I have been able to buy quite a collection this year. Most birds came from England, some from Denmark, and one pair from Australia. I now have the following species housed in my aviary :—

2/3 Rosella, 1/2 Stanley, 1/1 Princess of Wales, 5/3 Bourkes, 1/1 Roseate Cockatoo, 1/1 *Ara severa*, 1/1 Rock Peplar, 10/10 Budgies (all unusual types), and twenty different finches, Red Cardinals (with three young in the nest at present), orange Canaries, white and grey Java Sparrows, Bengalese, Cordon Bleu, Grass Finches, Zebras. These include this year's young.

I did not get the aviary finished before the middle of May, 1953. The birds were practically all young ones from the previous season (1952), but still I had the fortune of breeding eight young Bourkes, one young Rosella, and a number of Zebras and Budgerigers. I have three young Virginian Cardinals in the nest, and am trying to bring them up on mealworms and egg food mixed with raw meat. I have little hope, but will try anyhow. It is too late in the season. Had this occurred in the summer, I would have let the grown birds out to catch insects, they do not leave home when they have young ones ; I have tried this once before with success.

I am very anxious to see how the whole collection comes through the severe winter in the high altitude of Konnerud ; I live at 300 metres above sea level, the air is thin and clear and dry. The birds seem to thrive on the climate so far, and they have come into as good a condition as can be expected.

I imagine space in the Magazine is limited, so will let this be enough. At some later date I will relate something about the other bird-people we have here ; they are few, but there are some that are very interested.

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## THE BREEDING OF THE BLACK-CRESTED FINCH

By C. AF ENEHJELM (Helsingfors, Finland)

The Black-crested Finch—*Lophospingus pusillus*—from the interior of Argentine, was, as far as I know, first imported into Europe about twenty years ago. In a consignment of South American birds I got four birds, apparently two pairs, of a species new to me, and the name was not known by the Dutch importer. I sent a description to Mr. Karl Neunzig in Berlin, who gave me their name and particulars. At that time I had no further results with them, and gave them to a friend, who is specially interested in South American birds.

On a trip to the Continent in 1950 I was happy again to secure five birds, two cocks and three hens. In an indoor-flight in my bird-room in my house the birds behaved quite peaceably all the winter. I should mention that one pair of the birds was obtained from a private aviculturist, who had kept them in his somewhat roomy birdhouse with an adjoining outside flight, in the company of various small birds—Weaverfinches mainly—but parted with them because they were rather aggressive towards other birds. The other three birds were freshly imported.

In the spring of 1951 I put the first-named pair in an outdoor flight with an adjoining closed-in room in the company of various small finches and weavers, about ten pairs in all. The flight was approximately 20 by 7 by 7 feet, the indoor compartment about 7 by 7 by 7 feet. I had no opportunity to follow the birds very closely, but never observed that they were aggressive to other inmates. In July I observed an open nest, cup-shaped and very deep, made of coconut-fibres and lined with white dog hair. The nest was built in a Harzer wicker cage and contained three eggs. As a pair of Canaries also shared the flight I first thought that the nest belonged to those birds, but later on observed that the Crested Finches visited the nest. Two youngsters were duly hatched and reared. They left the nest when about fourteen days old, but were fed by the cock for a long time, I think about a month. The hen eventually settled down for another clutch of three eggs from which two youngsters were hatched and left the nest in due course. As far as I could see nothing but fresh ants' eggs were used for feeding. I had a lot also frozen for later use, but when the fresh ants' eggs, through some disturbance in the freezing-room, were spoilt the fate of my four young *Lophospingus* was sealed, and they all died, still apparently being dependent on this food.

In 1952 no attempts at breeding were made, and the old cock died. In the spring, 1953, I got a new cock and mated him to the old hen. As I was anxious to make some closer observations



I put the pair in a flight in the bird-room in the house situated close to my office, so I had time to look at the birds at frequent intervals. The flight is approximately 8 by 6 feet and about  $7\frac{1}{2}$  feet high. The room also contained five or six pairs of other small birds, Red-headed Parrot Finches, Zebra Finches, Cherry Finches, Cordon Bleus, Avadavats, Green Avadavats, and Bichenow Finches. As nests, Harzer wicker cages and small plywood boxes 5 by 5 by 5 inches, with half-open fronts were used. There were not very many branches, but they were sufficient. There was a big window facing south and a smaller one facing east. All feeding receptacles, open shallow glass feeders, were placed on a zinc plate on the floor, with the bathing facilities as well.

The *Lophospingus* settled down quite quickly and started nest-building in a Harzer cage. The nest was again mainly built of coconut-fibres and lined with white hair from a wire-haired terrier (a very good and highly treasured lining material easily obtained from every dog trimmer). I am sorry I cannot give the exact date of the first egg, two only were laid. One youngster was hatched on 4th May and left the nest on 18th May, two weeks old. The youngster was not able to fly up, but sat in a corner most of the time on the first day and was regularly fed by the cock. Already on 20th May I observed the youngster in one of the feeders, but am not quite sure if it took any seed. Already the next day, 21st, the youngster sat on a rather high branch, and on the following day, 22nd, it flew very well. Two days later some bird, I did not know which, started to pluck the youngster badly on the breast. Later on I observed it was the cock. This plucking grew so bad that I had to separate the young on 1st June, by which time it seemed quite able to fend for himself. I put him alone in a box cage 30 by 14 by 18 inches, in which he soon regained his plumage. He was feeding mainly on fresh ants' eggs and milksop, which also had been used by the parents for feeding, also some sprouted seed, millet and canary, and possibly some egg food was taken. Lots of chickweed had been at the birds' disposal all the time, and probably also used for feeding the youngsters. As far as I could observe the young one was fed mainly by the hen for the first week, after which time the cock also took part in the feeding. After leaving the nest the youngster was fed only by the cock and ignored by the hen, except that she also plucked it. As to the colour of the young bird, this was rather similar to the hen, only with some irregular, not very defined stripes down the breast. The crest was already clearly visible before it left the nest. On the 29th July the youngster seemed ill and died on the same day, as far as I could see, from enteritis.

Further mating was observed on 26th May and two eggs were laid on 31st May and 1st June, but the hen refused to sit. Nest-building was started again in the same Harzer cage and a new nest placed at



the side of the earlier one. On 25th June again two eggs were observed and two young hatched on 5th and 6th July. One of these died on 12th July and the other left the nest on 17th July. This youngster was not plucked, but had to be transferred to an adjoining flight on 8th August. This young bird—probably a hen—is still living at the time of writing (22nd November), and is exactly like the old hen.

On 19th July a fourth clutch of two eggs was observed and two youngsters hatched about 31st July, but died on 5th and 7th August.

The pair had usually behaved quite peaceably, but sometimes the cock started to chase some bird—usually a Zebra Finch up and down the flight. At length I had to transfer the Zebra Finches, as I wished to observe the *Lophospingus* and would not disturb them. After the fourth unsuccessful clutch the cock apparently thought it would be better to have the room for himself and his wife, so he started in a typical Cardinal-manner to chase now one bird, now another. As the victims happened to be Red-headed Parrot Finches, Plum-headed Finches, and Bichenows, which all had young I decided to catch the pair and put them alone in a smaller compartment about 6 by 3 feet, but of the same height as the previous one. This flight they shared only with a pair of Painted Quail, in which they took no interest. In this compartment they started to build a new nest in a Harzer cage and on 15th August two eggs were in the nest. Two youngsters hatched on 27th and 28th August, one of which died on 7th September, the other leaving the nest on 9th September, apparently a bit too early. On the same date the nest was transferred. As I had to go abroad on the same day, my wife took over the care of that special pair and reported to me that the young was plucked for a couple of days, but that the plucking then stopped. Apparently the lack of opportunity for further nest-building was the reason. On my return home on 26th October all three birds were in good condition, but a fortnight later the cock started to pluck and chase the young one, so I transferred it to the adjoining larger compartment already mentioned. The young bird had been damaged by the plucking of some of the primaries, so that he could not fly very well and used to climb up the netting to a branch. On these occasions the cock furiously attacked the young one through the wires and still plucked its breast. I had now to transfer it to the cage already mentioned, where it seemed to settle down quite satisfactorily and the feathers were soon in order.

I now wonder whether the reason for plucking is that the parents wish to nest again or that the cock feels that the young one is possibly a cock. As stated earlier the other young one, now about five months old, has not shown any signs of changing plumage, so it is probably a hen. I should of course be very interested to have a young cock, as there are, as far as I know, no data about the time the cocks moulting out to adult plumage. I should also mention that it is certainly not



my custom to take five clutches in succession from one pair as a general rule, but I was interested to see how many clutches this somewhat rare species would lay and I also was anxious to obtain more youngsters in order to observe their development.

The description of the egg is as follows : slightly pointed, greenish-grey, marked with streaks and spots of two darker shades, more pronounced towards the larger end. Size 19–20 by 15 mm.

As stated earlier, the bird was first imported alive to Europe about twenty years ago, again after the last war in 1949 in larger numbers and probably from time to time since then, as it is sometimes advertised in the fancy press.

As far as I know the Black-crested Finch was first bred by the late Dr. Maurice Amsler in 1939 and later by Mr. Allen Silver, and in 1949 and 1951 in Switzerland by Professor Hans Steiner, who gives a very interesting account of the breeding in Vol. 8 of *Die Gefiederte Welt*, 1953. I do not think it is an easy bird to rear, it is just the same thing as with many other species, that you must be lucky even to get a pair which wishes to breed. For instance, my other cock has been paired with both my other hens under exactly the same conditions, but they have never made any attempts to breed. This shows the wisdom of always getting several specimens of a species you are anxious to breed.

The species was first discovered by Burmeister on his expedition to the La Plata States in 1856, and later, in 1863, described in *Journal für Ornithologie* as *Gubernatrix pusilla*. In the Checklist, Vol. 12, Dr. R. Bowdler Sharpe describes the bird as *Lophospingus pusillus*, but says that the female is similar to the male. This, however, is wrong. The sexes of adult birds are easily distinguished. The cock has a black throat spot which is lacking in the female, and the stripes are more clearly defined in the cock, also the breast colour is a trifle deeper. In his large book, *Die fremdländischen Stubenvögel*, Part I, 1879, Dr. Karl Russ describes the bird as a Lesser Green Cardinal. In spite of the fact that there is no green colour in the *Lophospingus*, there is a certain resemblance between the two species, especially the female of the Green Cardinal. There is, however, a very remarkable difference in size, the *L. pusillus* being only 4.8 inches long and the Green Cardinal 7.5 inches.

*Further notes written on 3rd January, 1954.*

On 1st December I noted the older chick—born on 5th July—warbling with a very loud voice, and in a few days it was singing loudly as the old cock. The chick started serious battles through the wire-netting with his father in the adjoining flight, both plucking each other on the breast. I had to transfer the bird to a box cage. At the same time I observed a grey spot on the throat, growing each day, so



that a month later the bird had a patch almost as big as that of the old cock. At the same time the grey stripes on the sides of the head have grown darker, and are now almost black. Contrary to my earlier belief, this bird is a cock, the moulting out into adult plumage seems to start when the bird is about five months old and will be finished in about six weeks.

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## "GALLUS JOHNSONI" AND OTHER HYBRIDS

By DAVID M. JOHNSON (Port Orchard, Washington State, U.S.A.)

It is now a year since I made a report to the Avicultural Society on facts observed in the breeding of my birds for the season. Fourteen husky youngsters still survive in their juvenile plumage.

I will first, however, describe the eclipse in the hybrid cock which took place in June, 1953; it would seem that the hybrid changes more towards *sonnerati* with age. This cock lost his hackles, and they have been replaced with short, rounded, flat black feathers. The shoulders, formerly maroon red, are now showing the waxy webbed character of *sonnerati*, but the shanks are still pink. Strangest of all, one wattle has receded completely, while the opposite one has moved towards the centre of the throat. This is most interesting. It would not surprise me, if when this cock blooms again, perhaps in August, the spotted hackles returned.

I have raised a few second-generation hybrids this season, only to prove conclusively that the hybrid is fertile. Having to use a sister hen and not having any fresh blood of a non-related stock, I have not been anxious to breed from them. The eggs, though of the highest fertility, did not hatch well.

The chicks were unable to break through the shell, and were at first tiny and delicate. They were, however, strong enough after a week. I have had reports from other States of poor hatches from pure *sonnerati*, which causes me to wonder if lack of new blood is not a strong factor in this case.

Now for the report of what I am pleased to call "*Gallus johnsoni*." These are the super birds derived from a three-quarter *sonnerati* cock and a Cornish bantam hen. The pencilling is dark, the eggs were 100 per cent fertile, and all the chicks hatched out and lived. These chicks were robust from the egg, docile and tractable yet with a certain reserve, and with a hearty dislike of being touched or handled. They were suspicious of danger and ever alert. The blend of these two species is indeed harmonious. Half-grown pullets show many of the attributes of *sonnerati*, including whitish breasts and throats, tails carried low, as in both species, wings proportionately larger than in the Cornish bantam, but with bones somewhat larger than in



the *sonnerati*. The length of leg gives a graceful carriage, and the body is round and compact. The juvenile plumage resembles certain grouse of the same age ; the feathering of all is perfectly uniform, the heads are round, and there is no visible comb or wattle. None of the females of any of these hybrids has the facial skin. The colour is rather brown with the exception that just before a hen is laying there may be a slight rosy tint at the tip of her very small pea comb.

At present the juvenile plumage of birds of the year is not like either of the species from which they are derived ; it is rather distinctly its own yet withal a pleasant blend of both. In some future issue of the AVICULTURAL MAGAZINE I may be able to give a description of the adult plumage of these birds. The cockerels have yellow legs and the pullets green.

When considering the general characteristics of these birds it may be of interest to mention that they are quite playful, but in sham battles do not seem to hurt one another at all, and they are, in rapidity of movement, not to be compared with the comparatively slow-moving domestic fowl.

The three-quarter *sonnerati* cock would give one the impression, in the early morning especially, that he had turned vicious, as he delights in scaring the pullets of the year, frightening them until they seek cover, when he promptly finds them and affectionately tugs their neck and breast feathers, indicating that no harm is intended.

Our worst predators here are racoons which have become quite bold, and the so-called civets or little spotted skunks, which steal eggs and sometimes chicks, so that everything must be kept under wire.

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## BREEDING OF MEXICAN PTILOGONYS

By A. H. ISENBERG (Woodside, California, U.S.A.)

On our first trip by motor to Mexico in 1945 I saw for the first time live Ptilogonys at about 8,000 feet elevation between Mexico City and Taxco. It was a wonderful sight to see these lovely, graceful birds in their native habitat. There were about seven of them, and they were feeding on some sort of berries on a tree with reddish bark, not unlike our Madrone trees in California. Their pleasant call notes were constantly uttered as they flew from the food tree to another, back and forth. The time of year was April, so that the country was extremely dry.

Upon arrival at Taxco my wife and I were wandering about the fascinating old streets when we passed a seamstress' shop, and there, to my great joy, was a fine pair of Ptilogonys in a very small cage. No amount of persuasion and begging on my part would persuade



the lady who owned the birds to part with them, even though I offered her 100 pesos (about \$8.00). I was so excited and so disappointed. We thanked the lady for letting us see her birds, and asked where we might get some, and she said in the Mercados of Mexico City. It was many days until I could test the lady's advice, as we were on our way to Acapulco.

To make a long story short, I did finally manage to collect seven Ptilogonys among other nice Mexican birds. The back of our car was loaded with cages and birds on our home stretch. Two Ptilogonys died on the way, leaving five upon arriving home. After a week or more rest in a large cage in the "Loochoo Robin" aviary, the Ptilogonys were released into the aviary.

The next year saw one pair carrying nesting material, but the only result that year was that the male of the mated pair killed the odd male, and eventually in 1947 I had only three left, a male and two females. This was the year of my first near success, as I reported in my article on the hybrid Clarin-Jilgears, when one Ptilogony was reared to the flying stage, but it died in the nest. No further attempt to nest was made until this year, which is a peculiar thing.

In April, 1952, my wife and I again were on our way home from Mexico, this time with another seven Ptilogonys and other birds. Three of these were given to friends, and I kept two pairs which were released in due course with my old pair. Ptilogonys evidently are gregarious in nesting habits, as this year all three pairs had nests and hatched young, but only one pair was successful in rearing one young. As I write (8th August) the young bird is quite on its own, is mostly grey, and does not show any yellow on its under tail-coverts.

Ptilogonys are rather late nesters, June being the month nest building starts, and the nest is constructed mainly of Spanish moss plus rootlets and grasses and some hair and string, but without the Spanish moss I don't think they would nest. Two to three eggs are laid (eggs are bluish-grey, heavily peppered and speckled with dark brown) in the open cup-shaped nest. The nesting sites varied in my case. One pair built in a branch of Ceonotus (California wild lilac bush) about seven feet up and right next to the aviary netting in full sun; this later proved the death of the young from sunstroke. Another pair nested about nine feet up in a thick and well shaded trumpet vine; this young one simply disappeared. The third, and successful pair, nested in a fork of a top branch of a long-needled pine tree about nine feet up. This last nest was partially shaded. Two young hatched here after approximately 14 days of incubation, the male took his turn, and when not incubating would guard the nest quite well. Territories were set up by each male, and not too belligerently enforced, but I did feed them in four or five different places.

Ptilogonys, like Phainopeplas, feed their young on berries very soon



after hatching. I only gave mealworms two or three times a day, the parents hawked quite a few insects, but fed the young mostly on canned blueberries from which the syrup had been washed; fresh blueberries were also cherished when available, also soaked currants, Philadelphia cream cheese also was taken. The giving of mealworms presented a problem in such a mixed aviary. A pair of Indian Brown Robins were particularly annoying, both in stealing the worms and chasing the Ptilogonys away. The Robins built three nests in three different nest-boxes, laid three eggs each time, but did not hatch any. An Aztec Thrush was also a nuisance, but by quickly placing a few worms in different places the Ptilogonys got enough. Ptilogonys are not aggressive, and almost any smaller bird can frighten them off, such as a Scarlet Tanager, the Robins, etc. Fresh figs are greatly cherished by Ptilogonys, and, of course, elderberries. Apples and bananas, hard boiled egg, and my Pablum mixture are also taken.

In our climate Ptilogonys are quite hardy, and seldom use the shelter, even in rain and stormy weather. One year the temperature got down to  $11^{\circ}$  F. but the days were sunny; such extreme temperature change, however, is fortunately rare here,  $30-32^{\circ}$  being the usual extremes in winter, and not often.

Other near successes were: Grey-winged Blackbirds, one young out of nest, but injured in its first flight, and later died at about three weeks old; one young Red-vented Bulbul almost reared, but died of sunstroke during a very hot spell (these birds now have another young about twelve days old); Blue-winged Sivas had young; also Silver-eared Mesias, Shamas, White Eyes, and Satin Bower Birds had one egg; also Spectacle Thrushes and Indian Rock Thrushes. I just do not have enough aviaries for breeding. Next year I plan to have a series of breeding aviaries where *one* pair of birds can be by themselves.

Now (11th September) the one young Ptilogony is doing very well, and shows some yellow on the under tail-coverts.

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## THE BIRD COLLECTION AT THE PAIGNTON ZOOLOGICAL GARDENS

By KENNETH SMITH (Paignton, Devon, England)

The avian collection at Paignton Zoo has been increased considerably during the past few years, particularly in 1953. It is still small, however, if compared with the exceedingly rich and representative collection maintained here by Mr. Whitley before the last war. There are no comprehensive family exhibits here now, such as that of the Birds of Paradise of bygone days. We have, nevertheless, many interesting specimens, and we aim to increase the avicultural side of the Zoo as far as circumstances will allow.

New arrivals are accommodated alongside old inhabitants. These older birds are living reminders of former days when the Primley collection could vie with any other avicultural establishment in the world—of days, indeed, when in many respects it could not be excelled!

A pair of Great Condors have been at the Zoo for about twenty years. At the end of last January and in early February mating was observed, and on 26th February an egg was laid. The birds were most attentive, seeming to share incubation duties fairly, and my hopes were high. Maximum privacy had been ensured by fencing off the whole range of birds of prey cages from the public, and only the keepers directly concerned with the Condors' welfare were allowed in the area. But, alas! these precautions were of no avail, for on 3rd April the egg had gone; taking into account the full circumstances I was forced to the conclusion that it had been destroyed, most likely by the male. The day was Good Friday, and the noise of the first holiday crowds, although not close, was disturbing. Mr. Whitley told me that these Condors had succeeded in hatching a chick some years previously, and all went well for a while; then the cock killed the youngster—though not intentionally—when he was upset by visitors.

Caged next to the Condors is a pair of Chilean Sea Eagles, and on the other side are three Brazilian Caracaras. There is also a very tame Hooded Vulture, one of a number I brought from West Africa in 1951. Probably the most unusual exhibit among our raptorial birds is a Swainson's Buzzard (*Buteo swainsoni*), sent to us last winter by Mr. Tom Baines, of Calgary Zoo. I know of no record of this species being shown in Britain before. It is a choice feeder, and it is stated that in the wild state it subsists largely on gophers; our bird takes freshly killed mice, young rats, and rabbit flesh.

Four fine American Eagle-Owls, also received from the Calgary Zoo, are shown next to the British Little Owl, forming an amusing contrast in size. A pair of Barn Owls reared a chick this summer, and



in the previous season two young were raised by the same pair of birds.

The natural beauty of the Zoo, enhanced by subtropical trees and shrubs, provides an ideal setting for Cranes. They do well in spacious grass enclosures, where palms, bamboos, and other trees and plants ornament the scene and offer shade and shelter. A mixed group of Sarus and Demoiselle share the largest enclosure; other Cranes shown are Grey-necked Crowned, Japanese White-necked, and Stanley. Geese, too, roam the enclosures, our stock including Cape Barren, Egyptian, Canadian, and Abyssinian Blue-winged.

In January, 1953, we imported Black-necked Storks from India. They are handsome dandyish creatures, much more elegant than the Jabiru (the Jabiru I knew in the small Zoo attached to the old Georgetown Museum was very dignified, but hardly elegant!), and in the sunlight their darker plumage appears almost glossy. Black-necked Storks, I think, need a good deal of care in an English winter, even here in Devonshire. For extra protection against draughts and extreme cold we have built straw-padded fencing around their winter sleeping quarters. A notable eye difference, presumably of sex, occurs in these Storks; the larger bird, which I believe is the male, has an all-black eye, while the smaller bird, presumed female, has a yellow iris and black pupil.

Other large birds of note are Adjutant Storks, White Pelicans, Black-footed or Jackass Penguins, and an Emu. In the aviaries opposite the Storks' compound is a Spoonbill, which was found with an injured wing near Teignmouth. I may say that during the past two years I have had several reliable reports of Spoonbills observed in this district, sometimes of twelve to fifteen birds flying together. One of our keepers was fortunate enough to see a Spoonbill from the train window when travelling along the coastal railway between Paignton and Teignmouth.

The Sacred Ibis, Cattle Egret, and Vulturine Guinea fowl are other interesting species represented. The Cattle Egrets came from the collection I made in the Sierra Leone Protectorate. In summer they strut through the long grass in the aviary, arching and stretching their necks as they search for insects, just as they did back in Africa. The Vulturine Guinea fowl were brought from Kenya by Messrs. J. Seago and R. Bloom in November, 1952. They are now fully acclimatized. At times they cavort around the aviary in quite a mad manner, expressing it seems just the sheer joy of living; their concerted calls of excitement can be heard a long way off.

Oiled and injured sea birds are often brought to the Zoo for attention, some of them, of course, quite beyond recovery. We do what we can to save them, but it is an exacting business if the injuries are serious. Three Manx Shearwaters, which were washed ashore at





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SWAINSON'S BUZZARD (*BUTEO SWAINSONI*) IN PAIGNTON ZOO.

[To face p. 20





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SARUS CRANES (*MEGALORNIS ANTIGONE*) IN PAIGNTON ZOO.

To face p. 21]



Bude and offered to London Zoo, were sent here recently on the advice of Mr. John Yealland. We supplemented the fish diet with halibut liver oil capsules. On moonlight nights I watched their shuffling and scrambling gait, and now and again heard their wild penetrating call.

The largest aviary in the Zoo, the Cottage Aviary, 50 feet by 44 feet, contains seed-eating birds. It gives splendid opportunity for flight, while bushes and plant life provide a naturalistic touch. Silverbills, Zebra Finches, Rose Finches, Bengalese, Red-headed Buntings, Avadavats, Java Sparrows, and Canaries, as well as native species, nest freely. In spring and summer the floral effect is delightful and the activity among the birds causes great interest among visitors. In adjoining aviaries are four kinds of Myna : Black-headed, Grey-headed, Bank, and Pied.

The Parrot House collection is under the supervision of Miss Gladys Salter. Macaws are well represented and include Spix's, Illiger's, Severe, and Hahn's ; Conures include Blue-crowned and Golden-crowned ; Parrots include Salvin's, Red-throated, and Maximilian's ; and among the Parrakeets is the Green-winged King. Rarest bird in the Parrot House is the beautiful Blue-eyed Cockatoo (*Kakatoe ophthalmica*), the survivor of a pair specially secured in New Britain for Mr. Whitley by Mr. Shaw-Mayer. Elsewhere in the Zoo there are Ring-necked Parrakeets which bred during 1953. A pair of richly-hued hybrid Parrakeets (Barnard's  $\times$  Rosella), which came from Mrs. G. T. Clark's aviaries at Bromsgrove last May, is kept in the Pheasantries. Here, too, are Indian Gallinules, also a fine Hunting Crow, or Hunting Magpie, (*Cissa chinensis*), a gift from Mr. A. A. Prestwich.

Wild birds find the Zoo a virtual sanctuary. Buzzards soar or fly in languid fashion overhead, often several in view together. Teal, Shoveler, Pochard, Wigeon, and Mallard come to the lakes to join our waterfowl (Carolinas, Bahama Ducks, Pintail, and Sheld-Ducks, in addition to Mallard and some hybrids). Herons drop down to fish the shallows of the lakes, Moorhens abound, and Water Rails skulk in the reed-beds. Woodpeckers, Magpies, and Jays are common, and Goldcrests flit unobtrusively through copses and plantations.

It is probably correct to say that there are more Peafowl at Primley than anywhere else in Europe. Like the wild birds they enjoy complete freedom here, roaming as they wish through the Zoo grounds and over Mr. Whitley's private estates. They are left entirely to themselves at nesting time and bring up their own young, no attempt being made at hand-rearing. In springtime it sometimes seems as if one meets a Peacock in display at every turn, each bird attracting a circle of admiring visitors. The Peafowl roost in groups, and I often count twenty to thirty birds in a single tree. The report of a gun or the



careless banging of a door in the still of a summer night often starts them calling ; the raucous cries come from all directions, from every roosting place it seems, some quite distant. It is a remarkable experience to stand alone in the darkness in the centre of the Zoo, listening to the tremendous volume of sound coming from the near-by trees and from the wooded slopes beyond.

I have not, of course, mentioned all the birds in our collection. To do so would have given this article a catalogue complexion even more than it bears now. I have attempted to avoid this as far as possible, and I hope I have not fallen too far short of that aim. In conclusion, I would like to acknowledge the enthusiasm and meticulous care shown by Mr. R. Travers, and by Major D. Willis-Fleming, members of the staff ; they are responsible, day by day, for the welfare of the birds.

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## IT'S A "NEW WORLD" . . . . FOR BIRDS.

By Dr. GEORGE A. ALLEN (Salt Lake City, Utah, U.S.A.)

As the civilization of a country becomes more mature its inhabitants seem increasingly to recognize the importance that bird life plays in the economy of their land. This is evidently more true of older lands where the need for conservation is so great. Farmer and urban dweller alike recognize that abundant bird life means fewer insect pests and consequently better crops. Too, they appreciate more fully the æsthetic value of birds, and take steps to ensure preservation and propagation. There is apparently a direct relationship between the knowledge and care of bird life, and the degree of culture in a nation.

When the older civilizations were at their peak, protective laws were often enforced by the death penalty. Some birds, such as the rare and beautiful varieties of pheasants, could be owned and held captive only by royalty, and were therefore named the "Royal Birds". Feathers from those of rare beauty were only for the plumes of the ruling class, and a violation of this law meant the most severe punishment.

Evidence of esteem and admiration of avian life is to be found in our museums, where the designs show birds woven into the most delicate and costly fabrics. These, together with the rare paintings which once could be possessed only by the wealthy, now come down to us through the centuries as proof of the high appraisal these feathered aristocrats enjoyed in those elegant days.

But nowadays in Europe birds are taken for granted as almost a necessary part of most households. The city dweller with his small backyard plot keeps some ducks, bantams, or pheasants for the æsthetic value and animation which they lend to the oft-times drab



surroundings . . . as well as for a possible treat for his Sunday appetite. The home's interior is cheered by the presence of a multi-coloured pet, or the voice of a captive songster. As the standard of living goes up, the individual naturally has a wider selection of birds to choose from. Those whose pocket books permit purchase the rare and exotic types. However, those of less affluence equally share the desire for better birds, and sometimes acquire them at the sacrifice of more essential items. Though we human beings are often divided into economic classes, there is little or no distinction between the artistic judgments of bird lovers. The visual pleasure of an ornamental bird reacts about the same on all human retinas, the world over.

In some oriental countries the birds are for sale in cages of exquisite workmanship. American tourists delight in finding the Mediterranean market places virtually alive with gay finches, warblers, and canaries.

When Europeans settled the North American continent, wild life was richly abundant. But the basic problem of survival demanded people's full attention. Not until after the twentieth century began did we realize the tragic rate at which we had dissipated our wildlife resources, or the urgent necessity of restrictive controls. The years 1900 through 1920, witnessed the extinction and near extinction of several species of American birds. It was then, by the heroic efforts on the part of enlightened citizens, that protective legislation was passed to stem this growing calamity. The nation and the forty-eight component states are all now fully cognizant of the need for stringent protection, and are banded together in a great restorative movement.

The Federal Wildlife Agency protects the migratory birds. The game commission of each state protects its upland game inhabitants. These, together with the Audubon Society, the American Pheasant Society, and numerous other groups, have created a public consciousness of our feathered friends' place in our daily living. The few ripples started by the breeze of protest against waste has by now developed into a considerable wave of constructive action whose crest rises higher year by year.

This surge of interest has now attained very noticeable proportions. It is no longer considered a pastime for the effeminate. Lectures and pictures on this subject are filling our auditoriums. Bookstores everywhere have new departments for ornithological literature. Even the layman often buys the excellent new books of whose scholarly content and artistic appeal America may be proud.

An interesting example is the magazine with which your author is connected, the *Pheasant Fancier's*, *Game Breeder's*, and *Aviculturist's Gazette*. We began a little over a year ago with a mere bulletin; to-day it circulates in every state and territory of the Union. Other journals are also well received.



All this has resulted in a public demand for the unusual species. This is being met partially by domestic breeders, but to a large extent by importations from the corners of the earth. Europe's exports to the Western Hemisphere are increasing : but Africa, the Near East, the Orient, New Guinea, Australia, and South America, are also supplying an ever-growing number.

The Budgerigar is at present enjoying great popularity in the American home. Because of its friendly nature, ability to talk and ease in propagation, it has made a market for itself comparable to any new fashion fad. But, fashions change, and other species will gain equal popularity. The exotic species of parrots are in ascendancy, and rightly so, because of their brilliant colours and adaptability to household training. And, of course, the canary is a classic pet.

Thirty-two years ago, my oriental pheasants took nearly every prize ribbon the fairs here had to offer. But I must confess that they were almost the only birds of their kind to be seen in this part of America ! To-day oriental pheasants are familiar members of most amateur collections, and certainly basic to every aviary. Any school child knows them.

But even more remarkable is the new crop of organizations in this field. In the past five years alone, over forty-five new groups have organized with serious motives. Nor are we any longer considered hobbyists. Congress must now reckon with bird enthusiasts as a first-class pressure group ! Rightly or wrongly, one large society recently has actually been a force in delaying the construction of a large federal power dam project because its members feared this would destroy a wildlife area !

Like their forerunners in Europe, the American scientific organizations and societies stimulate interest in the preservation of unusual species, and keep the public informed on their care.

Yes, birds have achieved their place on the American scene. They have come out of the laboratories and museums into our homes and hearts. Breeding is now a recognized industry. Conservation is an accepted responsibility. Collecting is almost a national habit. These little feathered promoters put our best publicity experts to shame. For, once properly introduced, they are a product which really "speak for themselves".

It will be some time before birds on this continent have the popular understanding and respect which they enjoy in Europe. But there can be no doubt that they now have entered a "new world", and before long will become equally endeared to the American people.



## A CONVERSATIONAL LOVEBIRD

By MARIE EARL-OLSEN (New York, U.S.A.)

Some time ago my Fischer's Lovebirds (*Agapornis fischeri*) had five babies. Usually I finger tame these funny little creatures much the same as the young Budgies. There was one in the nest which seemed to me to be particularly brighter than the others and I named him Scampy. We spent a great deal of time together—he liked to cuddle close to my neck and would run in and out of a paper bag retrieving buttons and bottle caps I would throw in.

At the time I happened to be training two young Budgies and had them with me the greater part of the day, sitting on my shoulder and running around my neck from one shoulder to the other. Scampy chose a place right under my chin to cuddle.

As he grew older he enjoyed perching on the play pen and became unusually friendly with Buddy, our famous talking Budgie. Usually Buddy enjoys the company of other birds, but being somewhat uncertain how he would welcome Scampy, I watched very closely.

Unlike most lovebirds Scampy made no pretence of biting Buddy's toes and apparently all was well for they got along beautifully and were always together. This probably being the reason that Scampy has learned to talk.

One day recently Scampy was on my desk where I was writing and I was sure I heard him say a few words. Continuing with my work as before and paying not the least bit of attention to him I watched him closely. On my desk is a shiny brass calendar which intrigues him immensely. Soon I heard him say "Pretty Boy" as plain as day. You may well imagine my astonishment when I heard him utter his first words.

He since has added "sweet" to this and I am anxiously waiting for the rest of the sentence for I am almost sure he is trying to say "sweet-heart".

This has convinced me that birds taken from the nest early are far superior as talkers. They have complete confidence in us at this early age and show such devotion.

To my knowledge there is but one other lovebird that talked. I believe he was a Peach-faced (*Agapornis rosicollis*) and owned, if I remember correctly, by someone in England. I understand this little fellow would sit on his master's shoulder, nip his ear, and say "naughty boy".

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## BIRDS OF THE COLOGNE ZOOLOGICAL GARDENS

By MARVIN L. JONES (U.S. Army, Germany)

Of the eight major zoos of Western Germany to-day, the finest collection of birds is at Cologne. The zoo, having made the greatest change from war destruction to modernness, also has an admirable mammal and a small reptile collection. Not having the money of some of its sisters in Germany, it has, through skilful bargaining and business acumen, made a name for itself in the post-war zoo world. Its Director since May, 1952, Dr. Wilhelm Windecker, has added over 200 species of animals to the colony since his arrival, many of which are not to be seen elsewhere in the Federal Republic. The initial impression given to a foreign visitor is of a zoo that has suffered very much, but is trying very hard to make good once again. The buildings are for the most part very old and rather decrepit, but must serve till funds will permit replacement. The Monkey House in particular is in the same style as 1860, when it was opened, and some of the cages seem older. Paint is needed as are new bars and retaining walls, but the outside has been repaired quite well, and helps the overall picture. Only the Bird House can be called new, even though the shell of it was built in 1890. The interior is new, opened in the summer of 1952, in the style of Bronx Park, minus the balconies. The cages along one wall are for the larger birds such as toucans and hornbills, while the opposite side has smaller cages for the weavers and finches. All are wired in front and on the sides, and serviced from a rear alleyway; the wire and walls are painted cream colour and help cheer up the place somewhat. At one end of the building is a very large swamp type cage, with peat moss and a pool for the waders, and at the other two cages for monkeys, with smaller glass covered ones for the humming birds and sunbirds. These have plants and limbs, while the larger ones have perches and leaves on the floor. In one corner of the finch side are a series of glass-covered cages in tier fashion, the bottom for mammals and the top for the parrakeets and lories. The centre of the building has palms and benches for the visitors. A very interesting exhibit of winter shelters for the wild birds of the region is now being held in this space at the same time. The other two exhibition buildings are the Elephant House, a very old structure also, and the old Ostrich House made new as a combined Reptile and Winter House for the birds. The entire collection of reptiles is to be seen here in aquariums of varying size and varieties. Some of these are home-made and are very nice, featuring growing plants and dirt floors; some have pools, but others no water. The cages for the birds are of wire (reinforced) with connecting doors to



outdoor pens ; all are without tops, as are the pens. The centre cage has a large pool and is for the flamingoes. Pools flank the wall and create a more or less natural barrier to the cages for the crocodilians.

Scattered throughout the zoo are cages for birds, in temporary fashion, as a new run for the pheasants and related forms is under construction, and will be ready for occupancy by the end of December, 1953.

For the waterfowl are provided two large lakes with adequate breeding quarters ; these contain running water, so no danger of possible stagnation exists. The cranes and the swans are in a very large open lake area just near the main gate and about two blocks square. Several of the animals and birds are afforded complete liberty, such as the guans, tapir, and macaws. The latter have so far (the temperature has fallen below freezing on two occasions) been left out to seek shelter wherever they wish. The macaws prefer an open branch while the guans and tapir like thickets. None has so far proved of any trouble, and no bites have been reported, despite large numbers of children in the summer. Those in the zoo line can well understand the tension that these little devils can create in liberty animals.

On clear days a parrot school is held on the lawn just outside the Bird House and has proved a big hit with the visitors. It is very surprising what the Amazons can be taught with a little patience.

In all fairness to the Frankfurt Zoo, which also has a very large collection, Cologne has a better representation of the birds normally kept in a bird house, while Frankfurt leads in Accipitriformes, flightless birds, owls, and the herons. This zoo, however, lacks a good grouping of waterfowl despite a very large lake, and smaller cage birds. Likewise its Bird House is very old fashioned in keeping many of its inmates in cages similar to those used in pet stores, or very crowded. Both have their merits and rarities, but in my opinion Cologne takes the lead and has the finest specimens in plumage and colour. Taking them in order seen and not scientifically, we have in the new Tropical House a very nice male Eastern Cock of the Rock in full plumage, sharing a rocky, tropical planted cage with a number of sunbirds recently received from Africa, and as yet unidentified. This is the only Cock of the Rock in Germany and one of few in Europe. Antwerp has a female but no male. Sharing quarters in the same house are a single specimen of the rarely seen Indian Adjutant and a pair of Marabous, as well as a Saddle-bill, and one Secretary Bird. Proceeding along the walk toward the Bird House the next exhibit to catch our eyes is the large cranes' enclosure, filled with East and Western Crowns and Demoiselle, with a family of Mute Swans for company. The usually unruly Andean Geese are also to be seen here in the form of a pair, another pair are in the main waterfowl pond. Both get along very well with the other birds in contrast to all published



reports on this rare form of Magellan Goose. Just beyond the old bear dens and Lampeshausen, the village of rabbits, is the well-filled main waterfowl pond or *Teich* as it is called in German. A well-represented grouping is to be seen with many specimens which are newcomers from the Tilburg Zoo. The rarest are the Ashy-headed Geese, a young pair, and the typical Magellan Geese. A quartet of Spot-billed Ducks, two of the Black-backed Comb Ducks, and all the other waterfowl in the zoo are kept here, with the exception of the Coscorobas, which are on a small pond with the Bahama Pintails and the colourful Mandarins, Wood Ducks, and the Formosan Teal, with their equally rare cousins, the Maned Geese of Australia which are kept on a waterfall-made pond just in the rear of the main pool. Now within view is the main Bird House, a strange-looking structure reopened in 1952, and almost overcrowded with a well-rounded collection. The outdoor flying cage contains the Trumpeters, rare Orange-naped Imperial Pigeon, and Red-billed Green Fruit Pigeon, as well as the Illiger's Macaw, Pileated Jay, and a fine Magpie Jay of Central America. Flanking the two entrances are cages for the birds of prey, wire fronted with gravel flooring, and providing adequate room for all but the Condors. This trio came from Tilburg in the spring shipment, as did many of the collection. It is made up of a mature male and two immature specimens, a male and a female ; all get along very well so far. The Red Kite shares a cage with the Kestrels, and the fine Bateleur, a male just coming into colour, is their neighbour.

Once indoors the first sight is a mass exhibition of bill posters of zoos from other parts of Europe ; several are from the Eastern Zone and Holland. It is a very unusual thing to see a zoo boosting others in such a manner. The main building is very large, about equal to the London Zoo main building, and in the same style, except for the lack of cages in the centre. All but four are wire-fronted and have adequate skylighting, providing plenty of light even on rainy days. The light-coloured walls and cage fronts (in contrast to the dark greens and greys of many zoo bird houses) help this a great deal. The collection is arranged in no definite manner, but according to the neighbourliness of its occupants. Due to the limited number of cages some, such as the finch and tanager cages, are so filled that it is almost impossible to count the number seen.

Just right of the main door and proceeding in this manner, we first come to four little picture cages for the humming bird, sunbird (Tacazze), whiteeyes, and the sugar-bird. These are about  $3 \times 2 \times 2$  feet, and have painted backboards. They are serviced, as are all cages, from the rear. That they agree with the inmates is proved by only three deaths since their opening, and these were delicate humming birds. A fluorescent lamp gives adequate light and shows



off the brilliant colours of the sunbird and humming bird very effectively. The next series of cages are large enough for all to get a good flight, and are for the larger types of birds. The fine collection of Rhamphastines are kept here, as well as the hornbills. They are well mixed, but agree with one another. The one toucan named? is a semi-adult bird called *vitellinus* by Windecker, but which appears to be the same as *ariel* but with less red in the breast. I recall *vitellinus* has a yellow and white breast, so until further checking will leave as it is. The Ariels are very good and in fine colour, as is the young Toco. The Concave-casqued Hornbills are a true pair without a doubt, and next year plans are set to attempt to get them to build a nest and breed.

The formerly rare Hartlaub's Touraco, now seen in zoos all over the world, share their cage with a fine Buttner's, another *rara avis*. Farther down the line is one cage just full of pigeons and doves. Amongst the rarer species are the Amethyst Pigeon of Jobi, the Brown Witch Dove, and the Blue-headed Dove. All are great buddies and perch together very well. One cage in this grouping is filled with the fine myna collection, including the Lesser Hill, Bank, and Golden-crowned. The latter has never been seen before by me in any zoo and I would appreciate any comments on its previous exhibition. The end of the building has a large swamp cage with planted trees and shrubs providing cover and perches for its many inhabitants. The Burmeister's Cariama, never common, is here along with the Tiger Bittern and Ypecaha Wood Rail, the not too often seen (not in Europe that is) Florida Heron and Snowy Egret, and some Australian Crows (I don't know the real common name), likewise never seen before by me. The Red Bird of Paradise shares the next cage with the colies and the jays. It is a male and is now in full plumage, the wire-like tail feathers a very nice length. Among the many inhabitants of the crowded finch cages are Versicolor Buntings, Blue-backed Manakin, Mountain Cardinal, Green Cardinal, Diuca Finch, and Blue Thrush.

In the tanager cage the collection is comprised mostly of the smaller species, such as Three-coloured Calliste and Violet Euphonia, with a nice full-coloured Brazilian and a Black Tanager. The tier-arranged cages which provide space for the small mammals on the lower level, and birds on the upper, are the quarters of a pair of the Queen Alexandra's Parrakeet, not seen elsewhere in Germany, two Orange-fronted Conures, and an excellent specimen of the Red-backed Lory. The building has many more rarely seen forms and most of the commoner ones. Just outside the Bird House is the Parrot School, already mentioned, and the favourite tree of the at liberty Macaws. A grand and unusual sight is the full plumaged Red and Blue Macaw in full flight from this tree to another a full block away. The birds have now been at liberty since early spring, and have never attempted to stray from the zoo. Directly behind this open area are the new quarters



for the flamingoes, a natural swamp, which they seem to enjoy immensely. In the winter they will be brought in, as ice is the main danger, and usually forms overnight, when no one is around to break it up. At the rear end of the zoo in an area, still showing the ravages of war by bombing, are temporary cages for the pheasants, and a range for the Emus and Ground Hornbills. The Leadbeater's Ground Hornbill is one of the forms uncommonly seen. Returning to the main zoo area are passed the cages for common European birds, such as the Partridge and Tawny Owl. The majority of the rare birds have been listed, but many others, such as the Baillon's Aracari, Spot-billed Toucanet, Red-banded Aracari, Great Barbet, and the Sonnerat's Junglefowl, could be described as such also.

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## THE NATIONAL CAGE BIRDS EXHIBITION OF 1954

By DAVID SETH-SMITH

The Show held at Olympia on the 7th, 8th, and 9th January, was certainly as good as any of the great shows that I can remember, and I have not missed many, in fact we are told that it was a record, a word I seem to remember hearing after every show I have attended. No doubt it was so, chiefly from the enormous and ever-growing popularity of the Budgerigar. Canaries and Budgerigars occupied practically the whole of the body of the hall, and for the foreign and more interesting of the British birds one had to ascend to the spacious gallery.

I am not particularly interested in Canaries nor, to any great extent, in Budgerigars, since they have become as domesticated as Canaries or poultry, but there is one particularly interesting point about them, namely the extreme rapidity with which they have become domesticated. I remember very well the first pair of blues (or I think it was a trio) exhibited at the Royal Horticultural Hall in November, 1910, by Mr. Pauvvels, of Belgium. They caused quite a sensation as they also did when, with their owner's permission, I showed them at a meeting of the Zoological Society. This was at that time the only variety, except the yellow, to appear in the Budgerigar, and now, forty-four years later, we see the bird changed in size and present in a great variety of colours and combinations of colour, and in this one show, numbering some 2,600 birds. This shows what can be done in a very free-breeding species by careful selective breeding. The Budgerigar is surely quite unique in the way it has taken to a domestic life.

The class for Lovebirds and Parrotlets was well filled, mostly by



Fischer's Lovebirds. This is a fine species which I hope will not be allowed to dwindle and die out, as has been the case with some of the Lovebirds such as the Black-cheeks and the once common Madagascar. There were some excellent Masked, Peach-faced, and Red-faced, as well as Blue-winged Parrotlets.

There was a beautiful Golden-mantled Rosella which quite put the Common Rosellas in the shade, a fine pair of the now very rare Derbyan Parrakeet, some very good Stanleys, Plumheads, and Cockatiels, as well as a grand pair of Queen Alexandras. I wish they would not persist in calling this bird the "Princess of Wales' Parrakeet". There has been only one Queen Alexandra, and it was in honour of this great lady that Gould named the bird, although she was Princess of Wales at the time.

Amongst the Lories and Lorikeets was a beautiful pair of the very rare and pretty Musschenbroek's Lorikeets, as well as several of the typical Lories. Hanging Parrots were represented by Blue-crowned and Vernal. There was a good Hawk-head, two female Eclectus, and a lovely Lear's Macaw.

There were two classes for the commoner Waxbills which were well filled, while that for the rarer Waxbills and their allies contained some such gems as Violet-ears, Dufresnes, Painted Finches, and others not often seen. Parrot Finches, Gouldians, and other Grass Finches were well represented.

Amongst other seed-eaters one noticed several species of Cardinal and the American Evening Grosbeak, Yarrell's Siskin, Golden Sparrows, and the rare Green Twinspot. I was interested to see a pair of the charming Painted Quails, delightful birds for a grassed aviary, but not suitable as cage birds.

The Zebra Finch seems to be becoming as much a domestic bird as the Budgerigar. There were no less than four classes for it, one for the normal type, one for "Cinnamon and Fawn," one for "White, Cream, Silver, and Albino", and the fourth for "Pied and any other colour". I must say the Zebra in the form and colour in which Nature made it is beautiful enough for me.

The foreign soft-bills formed a grand collection. The humming birds of which some half-dozen species were shown, appeared to be in excellent condition, and seemed to be enjoying themselves in spite of the comparatively low temperature prevailing, though the management had done everything possible to warm that part of the hall. Sunbirds, too, were well represented by such showy species as the Amethyst, Malachite, Tacazze, and Amethyst-rumped, a lovely group which did not in the least find fault with their conditions. Sugar-birds and Zosterops too looked very good, while the Tanagers, both large and small, were in great force and of many species. They are amongst the world's most colourful birds, but not more beautiful



than others we were still to see ; Niltavas in black and blue take a lot of beating, and the pair shown had as their neighbours the Natal and Cape Robin, both most attractive species. The Thrushes and Fruit-suckers were also a nice lot with the very handsome Blue and so-called Common Rock-Thrush, the Orange-headed, and Olive-backed Thrushes.

Some of the Starlings are amongst the most showy of birds, and here were nearly a score of these from the brilliant Long-tailed and Purple-headed Glossy and the Spreos to the more sombre-hued Pagoda Starlings ; and of their near relations, the Mynahs, we were introduced to several that were expert talkers.

There were some good Toucans, Blue Pies, and Jays, and a class of only two entries for Doves contained a pair of Barred and a pair of the very pretty and rare Plumed Doves from the dry parts of Australia, very desirable in an aviary where desert conditions can be maintained, but not looking their best in a cage.

The last classes in a show of this kind are generally the most interesting, and may produce some thrills, because they generally contain birds that are quite out of the ordinary run. The three classes concerned were for " All other " softbills (1) not larger than a Pekin Robin, (2) Larger than a Pekin Robin, but not larger than a Glossy Starling, and (3) Larger than a Glossy Starling. In (1) there were Red-headed Manakins, delicate little black birds with bright red heads, Blue-backed Manakin and Coppersmith Barbet. In (2) were a pair of the rare African Jacana or Lily-trotters, birds only suited to an aviary containing water-lilies, a Wilson's Bird of Paradise in very good condition, a Blue-winged Pitta, Green-winged Malkoha (a species of Cuckoo), Brown Thrasher, Babbler, and Barbets ; all very rare birds. The last of these three classes contained the most spectacular birds of all, namely three species of the larger Birds of Paradise, a Greater, a Red, and a Twelve-wired, all in lovely condition, though the last had broken off the delicate tail-wires from which the species derives its name. The judges awarded to the Greater Bird the prize for the best Foreign Bird in the show.

British Birds were well represented, with no less than six well-filled classes for those bred in cages or aviaries. The breeding of British birds in captivity has progressed steadily since foreign birds became more difficult to obtain than formerly, and much can be learnt of the breeding habits of even our commoner birds by this means, as was proved by Dr. David Lack when he bred the common Robin in an aviary.

British soft-bills were a lovely lot, such mites as Wrens, Willow Warblers, and Tree-Creepers being in perfect condition, and proving the great skill of their owners. This section was of great educational value to all who wished to see, in the flesh, some of our least common



native species such as the Black and Common Redstarts, Shorelark, Fieldfare, Ring Ouzel, Golden Oriole, or Great Grey Shrike. The Waxwings were, as usual, looking sleek and beautiful. They are the most contented of birds so long as they can gorge themselves on the food they like. I used to find that soaked currants suited them very well and did not make them too fat, which Waxwings are very inclined to become.

On the whole, the birds were shown in suitable cages, though there were some exceptions, but I would like to protest against the present fashion of painting the bars of the cages white. If we painted the wire-netting of our aviaries white, the birds would be practically invisible, so we paint them black, and the birds show to perfection. These white cage-fronts only dazzle the eyes and spoil the view of the occupant.

From this brief and incomplete review it will be gathered that the National Exhibition has been a grand show, splendidly organized by the proprietors of *Cage Birds*, to whom all interested in aviculture owe a deep debt of gratitude. It has been a great undertaking and we are told that any profits are to be handed over to charity.

\* \* \*

## LONDON ZOO NOTES

By JOHN YEALLAND

Some ninety birds have been added to the collection during the past two months. The presentations include two Bushy-crested Hornbills (*Anorrhinus galeritus carinatus*), new to the collection; a Great Indian Hornbill (*Dichoceros bicornis*); a Bay Wood Owl (*Phodilus badius*); two White-crested Jay Thrushes (*Garrulax leucolophus*); two White-throated Jay Thrushes (*G. albogularis*); two Striated Jay Thrushes (*Grammatoptila striata*); three Blue-cheeked Barbets (*Cyanops asiatica*); three Hodgson's Barbets (*Thereiceryx lineatus*); three Larger Racquet-tailed Drongos (*Dissemurus paradiseus*); two Barred-shouldered Doves (*Geopelia humeralis*); a Cape Dove (*Œna capensis*); two Blue-spotted Wood Doves (*Turtur afer kilimensis*); two Blue Sugar Birds (*Dacnis cayana*); a Black Tanager (*Tachyphonus rufus*); two Indian White-eyes (*Zosterops palpebrosa*); a Pale Rock Bunting (*Fringillaria impetuanii*), new to the collection; two Egyptian Geese (*Alopochen aegyptiacus*); a Goosander (*Mergus merganser*); two St. Thomas Conures (*Eupsittula pertinax*), and two Rosy-faced Lovebirds (*Agapornis roseicollis*).

A pair of Tri-coloured or Prince Maximilian's Jays (*Uroleuca cyanoleuca*) have been purchased. This handsome bird has never before been exhibited here, but was once in Mr. Whitley's collection.

An Edwards' Pheasant (*Hierophasis edwardsi*); ten Amethyst-rumped



Sunbirds (*Cyrtostomus zeylonicus*), and four Purple Sunbirds (*C. asiaticus*) have been received in exchange. Four Ornate Lorikeets (*Trichoglossus ornatus*) ; five Forsten's (*T. forsteni*) ; a Black Lory (*Chalcopsitta atra*) ; three Black-capped (*Domicella lory*) ; three Purple-capped (*D. domicella*) ; one Chattering (*D. garrula*), and three Yellow-backed (*D. g. flavopalliata*) have been deposited, together with four Crowned Pigeons (*Goura cristata*) ; ten Nutmeg Fruit Pigeons (*Myristicivora bicolor*) ; a Javan Mynah (*Gracula intermedia javana*), and three Yellow-crowned Bulbuls (*Trachycomus ochrocephalus*).

Two Black-footed Penguins have so far been bred and the Emus, which usually nest in February, have laid three eggs.

\* \* \*

## BRITISH AVICULTURISTS' CLUB

The forty-first meeting of the Club was held at the Rembrandt Hotel, Thurloe Place, South Kensington, S.W. 7, on Wednesday, 13th January, 1954, following a dinner at 7 p.m.

Chairman : D. Seth-Smith.

Members of the Club : Mrs. J. R. Alderson, W. D. Bell, Miss K. Bonner, Mrs. V. M. Bourne, Captain A. Clarence, T. R. W. Crewes, W. D. Cummings, A. H. D'Aeth, J. O. D'eath, Miss S. A. Fothergill, J. C. Garratt, Miss D. Gask, T. Goodwin, H. J. Harman, R. E. Heath, H. J. Indge, Miss E. M. Knobel, Miss M. H. Knobel-Harman, G. S. Mottershead, S. Murray, K. A. Norris, A. A. Prestwich, J. H. Reay, R. C. J. Sawyer, H. A. Snazle, P. Sutton, R. A. Taylor, E. N. T. Vane, N. S. Walker, H. Waller, C. H. Wastell, H. Wilmot.

Guests : Dr. K. Aylwin-Gibson, J. Bailey, D. Bell, M. D. Bell, Mrs. W. D. Bell, Lieut.-Col. C. L. Boyle, Mrs. C. L. Boyle, S. Croucher, Mrs. S. Croucher, Miss H. Gentry, F. S. George, P. Hansen, Mrs. H. J. Indge, Mrs. N. Masters, Mrs. S. Murray, Mrs. J. H. Reay, Mrs. D. Seth-Smith, T. Spence, Mrs. P. Sutton, Mrs. R. A. Taylor, Mrs. C. H. Wastell, Miss H. Wastell, Mrs. H. Wilmot, A. J. Woods, Mrs. A. J. Woods.

Members of the Club, 33 ; guests, 25 ; total, 58.

Lieut.-Col. C. L. Boyle showed the Carling Conservation Club coloured sound film "Ring-neck Pheasant". This film depicts the life history of the Ring-neck, introduced into Canada mainly for sport, so it is perhaps not altogether surprising that it commences with the shooting of several pheasants and ends in the same way. It, nevertheless, is of great interest and contains some really excellent close-ups.

J. C. Garratt showed his coloured film "Humming Birds". The title inadequately describes the contents of the film as, in addition to Humming Birds, it shows many other birds in the aviaries at "Wychwood". No particular sequence is followed and we are shown indis-



criminally pictures of Parrakeets, the gardens, and Sunbirds, Sugar Birds, and Humming Birds in colourful natural surroundings. The film may be best described as a very creditable effort by a real bird enthusiast.

The next meeting of the Club is on **10th March, 1954.**

ARTHUR A. PRESTWICH,  
*Hon. Secretary.*

\* \* \*

## NEWS AND VIEWS

J. M. Spence, Cape Town, writes : " I have just bred a young Cape Robin, *Caffrornis caffra caffra*, and as far as I know it has not been bred in South Africa before."

\* \* \*

H. Murray reports : " I managed to get a second generation of my Guiana Parrotlets, but it was so late in the year, November-December, that they did not thrive and died when six weeks old."

\* \* \*

The Society holds a very large stock of back numbers of the AVICULTURAL MAGAZINE from which it is generally able to supply the needs of members who require particular copies. Inquiries should be sent to the publishers, Messrs. Stephen Austin and Sons, Ltd.

\* \* \*

D. M. Reid-Henry is forming a collection of skins of British and foreign birds, both common and rare. He would be glad if members having the misfortune to have any birds die would send the bodies, as fresh as possible, to him at 43 West View Drive, Woodford Green, Essex.

\* \* \*

Our publishers take a bow. A member in Alabama writes : " The printers, the binders, the Editor, and all concerned with getting out the AVICULTURAL MAGAZINE do a beautifully magnificent job. The now rare privilege of seeing a task done with infinite care and pride is due to the above mentioned. I gratefully thank them for a wonderful magazine throughout."

\* \* \*

J. W. Clemitson reports for 1953 : " My old pair of Cockatiels have bred eleven young, making thirty-three in three seasons. The most interesting event has been one young Crimson-wing which I hand-reared from three days old. The Crimson-wing egg was incubated for two weeks under a big split-fallow Budgerigar hen, and then completed by my Stanley hen, who refused to feed the youngster. Hand-rearing has taken four months before the youngster was entirely independent. However, it was well worth it as the youngster is strong and healthy and, of course, very tame."



Dr. Alan Lendon writes : " I should like to take this opportunity of thanking you personally and through you, the members of the Avicultural Society, for many kindnesses and much hospitality during my stay in England. I have seen a great deal of interest and have been cordially welcomed wherever I have been, and I shall always have the most pleasant memories of English aviculturists and of their collections.

I must ask you to make a correction in the next issue of the magazine. In the last [1953, 176] I stated that Sir Edward Hallstrom had bred the Red-eared Conure (*Pyrrhura cruentata*) last year. I have recently seen the true *P. cruentata* (a very lovely bird) at Wassenaar, and it is certainly not the bird Sir Edward bred. I rather think now that it was the Red-bellied that he bred, but I will try and confirm this later."

\* \* \*

Dr. E. Bérault writes from Rio de Janeiro : " My collection of Humming Birds is still doing well. I possess one *Heliactin cornutus* in wonderful plumage, a young bird which has moulted in my aviary, and my best bird. I believe I now know the best way to keep the more difficult species : *Heliactin*, *Heliothrix*, and particularly *Pygmornis*, which live and moult perfectly, mostly thanks to a massive production of fruit flies (*Drosophila*).

" I also use a new way of transportation ; instead of putting the Humming Birds in a cage, which creates difficulties in airplanes, I place each of them in a small bag of cloth with a small hole for the head to stick out. They are thus obliged to keep quiet and do not become exhausted. Every hour, I take them out of the box where I keep them during the trip and make them drink. They can travel for twenty-four hours under such conditions without being tired."

A. A. P.

\* \* \*

## REVIEWS

PHEASANT BREEDING AND CARE. By JEAN DELACOUR. Illustrated. Fond du Lac, Wisconsin : All-Pets Books, Inc. 1953. 98 pages. \$3.00. (Distributed in England by Bailey Bros. and Swinfen, Ltd., 46 St. Giles High Street, London, W.C. 2.)

This attractively illustrated and printed book is a completely revised and enlarged edition of the book on Ornamental Pheasants by Charles F. Denley, which proved so popular with and helpful to fanciers, both amateur and old hands. Mr. Delacour writes with authority and precision on a subject with which he has been familiar for many



years, both at first-hand and through the experience of his trusted aviary attendants in France.

The encouraging tone of the book, as evidenced by such sentences as "All the pheasants, with very few exceptions, live and breed well in captivity", should go far to make recruits for the hobby and sport of pheasant-keeping. Moreover, the suggestions for keeping these handsome birds are of such a useful and practical nature as to enable almost anyone to apply them with satisfactory results.

The descriptions of the various species are very compact and to the point—sufficient to enable the reader to recognize and identify them. The accompanying black-and-white illustrations are excellent close-up photographs of birds in typical poses; they enhance the practical value of the text measurably.

Detailed suggestions for the construction of runs, shelters, etc., are given, all based on actual and successful experience. The sections devoted to breeding and to feeding are especially good—two phases of pheasant-keeping which must be mastered to make a success of this fascinating pastime or business. Of special interest and value is the chapter entitled "Pheasant Health and Disease Control", contributed by Dr. Jungherr, who heads the Department of Animal Diseases at the University of Connecticut. One of the most valuable aspects of this handy up-to-date book is the excellent bibliography printed at the end. It enables the reader to delve more deeply into whatever phase of pheasant-keeping happens to intrigue him.

CARL NAETHER.

\* \* \*

DIE VÖGEL DES LANDES SACHSEN (The Birds of Saxony).

By DR. RICHARD HEYDER. With 20 portraits and other illustrations. Leipzig: Akademische Verlagsgesellschaft Geest & Portig K.-G. 1952. 467 pages. Price: DM. 28.00.

In this comprehensive and carefully done research work we are given authentic and ample information concerning both the occurrence as well as the distribution of birds in Saxony.

The author has collected his data over a period of forty-odd years, has verified them as best he could, and has presented them in an interesting manner. His source materials—bibliography—give in chronological order 1,167 references—an astounding wealth of materials on which to base his findings. This bibliography is one of the most valuable parts of Dr. Heyder's book, since it affords the reader an excellent overview of the entire field, indicating at the same time the painstaking thoroughness with which the author performed his large task.



The numerous species of birds occurring in Saxony are given separate and detailed listings in this comprehensive book. Each listing explains the frequency of occurrence as well as the distribution of the bird or birds in question, supported by references. Anyone seeking dependable information regarding the many species of birds occurring in Saxony will find this book a rich source.

A detailed alphabetical index of places—towns and villages—where certain birds occur as well as an alphabetical index of the scientific names of the birds of Saxony round out this practical work.

CARL NAETHER.

\* \* \*

**PARROTS EXCLUSIVELY.** By KARL PLATH, Curator of Birds, Chicago Zoological Park, CESSA FEYERABEND, and Dr. IRVING E. ALTMAN. Illustrated. Fond du Lac, Wisconsin: All-Pets Books, Inc., 1953. 54 pages. \$1.25. (Exclusive British Distributor: Bailey Bros. and Swinfen, Ltd., 46 St. Giles High Street, London, W.C. 2.)

This well-illustrated book, with colourful paper cover, is representative of the practical guide-books which All-Pets, Inc., is issuing in increasing numbers. Three authorities, each one thoroughly conversant with his or her subject, have pooled their experience and their knowledge to produce this handy and highly informative book on parrots, which are now in their hey-day of popularity both in Europe and in the United States.

Following his introductory comments on feeding, caging, and breeding, Karl Plath describes in pithy, specific language the different species of parrotlike birds, beginning with the Amazons, followed by the Macaws, Conures and other American parakeets, Lovebirds, Cockatoos, and, finally, Cockatiels. Some excellent black-and-white illustrations enhance the text noticeably.

The section devoted to "Personality and Training" is indeed interesting, dealing as it does with the remarkable ability of parrotlike birds to respond to human training, and citing many fascinating and some unique instances of unusually well-trained birds. The reader is given practical suggestions as to which species of parrotlike birds are likely to become good talkers, when they should be purchased, and how they should be taught.

The final portion of this handy book presents practical hints on how to keep your parrotlike birds in good health for many years. It is therefore one of the most important in the book; it was written by Mr. Altman, a veterinary doctor.

The illustrations were done by Karl Plath and also by Douglas Tibbitts, staff illustrators for the Chicago Natural History Museum.



All in all, this is a stimulating book on a very popular subject, filled with practical hints, which should find a permanent place on every bird-fancier's bookshelf.

CARL NAETHER.

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## NOTES

### BREEDING OCELLATED TURKEYS AT THE ROTTERDAM ZOO

With reference to my information in this Magazine, No. 5, Vol. 58, September-October, 1952, it may be of interest to mention the breeding results obtained in 1953. The hen (of the same pair) laid from 13th May until 18th June (rather late in the season) 14 eggs, all fertile. Ten chicks hatched, five of which had bad (crooked) toes. Eight chicks were raised, the two that died were faultless. The sex-ratio was about fifty-fifty.

F. J. APPELMAN.

\* \* \*

## CORRESPONDENCE

### THE MASKED FINFOOT (*Heliopais personata*)

I write to inquire if any member of the Society can give any information as to the above bird. Has the Finfoot ever been bred in captivity, and for that matter has it ever been shown in a U.K. zoo? I think, am not too certain, I once saw a Finfoot fly across a stream in Upper Assam. But I have never seen it in captivity.

C. BUCKINGHAM JONES.

DIBRUGARH,  
ASSAM.

[We have no information regarding the importation of this bird, and regard it as unlikely.—ED.]

### MOUSTACHE OR BANDED PARRAKEET (*Psittacula a. fasciata*)

This bird is very common in India. In captivity it seems difficult to breed, at least not many definite successes have been recorded. I put this down to the fact it does not stand captivity very well.

I have lost, I suppose, nearly a dozen birds in the last two years. Only one did I manage to keep alive for any length of time, a female which I had for nearly that period. All the rest died during the quarantine period I always give to new birds on arrival, or within the next three to four months.

And always the same complaint—pneumonia—save one killed in a hailstorm. At least the symptoms are those of pneumonia. I have no *post-mortem* facilities here. The bird is in rude health one minute, sick the next, and dead within 6–8 hours. All the pneumonia symptoms as set out in Tavistock's *Parrots and Parrot-like Birds*. My last two casualties were quite recent. As soon as the birds showed signs of illness, I treated them with Sulphamethazine, but to no effect. The disease is so rapid the drug seems to have no time to take effect.

But what causes the disease?

I was and am anxious to breed Moustache Parrakeets. I like the birds. But they have beaten me. I just cannot keep them alive, and I think I am not alone in this. A certain zoo in India seems to have the same trouble, at least I have noted a succession of these birds, following on casualties presumably. And it cannot be the climate, chills etc.; *P. a. fasciata* is indigenous.

Can any member of the Society throw any light on how to keep the Moustache Parrakeet in good health in captivity?

C. BUCKINGHAM JONES.

DIBRUGARH,  
ASSAM.



## BREEDING PARROTLET HYBRIDS

I have read the letter from H. Wildeboer in the AVICULTURAL MAGAZINE, November-December, 1953, referring to my Parrotlet article. Of course I have read Neunzig several times, but I can only say that perhaps he is speaking about another sub-species of the Parrotlet family. The legs of all my birds are of nearly the same colour, differing only a little from flesh-coloured to greyish flesh-coloured, but not according to species. My Green-rumped Parrotlets are not bigger than my Blue-rumped; if two old cocks perch side by side, the Blue-rumped looks definitely the bigger.

J. DALBORG-JOHANSEN.

GRAABRODREPLADS 6,  
ODENSE, DENMARK.

## BREEDING RED-BELLIED CONURES

I have been successful with my Red-bellied Conures (*Pyrrhura frontalis*) this year. The hen laid in June, and after incubating for approximately 30 days, hatched out two young in the first part of July, which left the nest 45 days later. The hen incubated alone, but the young ones were fed by both parents. They used dry seed, sprouted seed, and mostly ripe apple and pear as rearing food.

When the youngsters left the nest they were fully feathered, nice birds very much like their parents, but a little duller in colour and with shorter tails. The parents, especially the cock, fed them for nearly a fortnight after they had left the nest. The old birds did not feel inclined to start a second brood, but after a month or two the hen became very bored with the youngsters, and I transferred them to another cage. The breeding cage, only 80 cm. long, was placed in my bird-room with a nest-box (formerly used for Bourke's) placed outside.

I am sorry I cannot give more exact information about the eggs and dates, but I dared not disturb the nervous birds too much.

J. DALBORG-JOHANSEN.

GRAABRODREPLADS 6,  
ODENSE, DENMARK.

\* \* \*

CORRIGENDUM.—Volume LIX, No. 6, November/December, 1953. Page 209, line 31, for "fecal sacas" read "faecal sacs".

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# THE AVICULTURAL : SOCIETY :

FOR THE STUDY OF  
BRITISH & FOREIGN BIRDS  
IN FREEDOM & CAPTIVITY

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1st JANUARY, 1954

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*The date attached to each name is that of the year of election or restoration to the Membership.*

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1894 SETH-SMITH, DAVID, F.Z.S., M.B.O.U. ; "Brabourne," 7 Poyle Road, Guildford, Surrey.

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1946 DERSCHIED, JEAN-PIERRE, F.Z.S. ; Armendy, Sterrebeek (Brabant), Belgium.

1921 DE SOUTHOFF, GEORGE, C.M.Z.S. ; 9-11 Via S. Spirito, Florence, Italy.

1937 LENDON, ALAN, M.B., B.S., F.R.C.S., F.R.A.C.S. ; 66 Brougham Place, North Adelaide, South Australia.

1902 RUDKIN, FRANCIS H. ; R.I., Box 8, Fillmore, California, U.S.A.

1904 SILVER, ALLEN, F.Z.S., M.B.O.U. ; Birdsacre, Llantarnam, Mon.

1928 WEBB, C. S., C.M.Z.S. ; The Royal Zoological Society of Ireland, Phoenix Park, Dublin, Eire.

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1952 ABBOTT, R. ; 60 South Street, Cottingham, E. Yorks.

1951 ADAMSON, Miss B. ; 59 Wellington Street, Slough, Bucks.

1952 ADAMSON, J. ; 21 Bright Street, Darlington, Co. Durham.

1949 ADAMSON, REGINALD MAURICE ; c/o Zoological Society of London, Whipsnade Park, Nr. Dunstable, Beds.



- 1949 ADLARD, Major J. E., F.L.S., F.Z.S., F.R.G.S. ; 108 Grenville House, Dolphin Square, S.W. 1.
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- 1944 ALDER, EDWARD ; 49 Swinburne Road, Abingdon, Berks.
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- 1953 ALEXANDER, T. H. ; 149 Kirkgate, Wakefield, Yorks.
- 1952 ALLEN, Dr. G. A. ; 1328 Allen Park Drive, Salt Lake City, Utah, U.S.A.
- 1929 ALLEN, Miss GERALDINE RUSSELL ; Davenham Hall, Northwich, Cheshire.
- 1925 ALLEN, M. T., M.A., F.Z.S. ; Ravenswood, 42 Watford Road, Northwood, Middlesex.
- 1931 ALLISON, N. G. ; Duxhurst Cottage, Langley Lane, Ifield, Nr. Crawley, Sussex.
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- 1948 \*ANDERSON, J. W. H. ; "Roukenglen," 381 Musgrave Road, Durban, South Africa.
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- 1952 ARA, LEO A. ; 9 Park Mansions, Park Street, Calcutta, India.
- 1927 ARNOLD, J. H. ; 20262 Canyon Hgy 18, Anaheim, Calif., U.S.A.
- 1952 AROOZOO, D. D. ; c/o Union Insurance Society of Canton, Ltd., Head Office, Hong Kong.
- 1952 ARRAS, Fr. ; Chaussée d'Anvers 50, Lierre, Belgium.
- 1929 AUBURN, F. W., F.Z.S. ; Willow Creek, Arkley Lane, Arkley, Herts.
- 1953 BADRICK, F. E. ; 24 The Mall, Clifton, Bristol 8.
- 1950 BAILEY, E. H. ; Cleaghmon, Ballinasloe, Co. Galway, Eire.
- 1953 BAILEY, F. ; 54 Lynwood Grove, Audenshaw, Manchester.
- 1949 \*BAIRD, W. G. ; 109 Russell Street, Palmerston North, New Zealand.
- 1951 BAKER, G. H. ; 45 Louis Drive, Willerby Road, Hull.
- 1952 BAKER, G. M. ; Hatherlow Aviaries, 70 Flambard Avenue, Christchurch, Hants.
- 1904 BAMFORD, WILLIAM ; Bridgecroft, 70 Kent Road, Harrogate.
- 1932 BANKS, GEOFFREY ; Oakwood Lodge, Sutton Road, Barr Beacon, Walsall.
- 1928 BARCLAY, EVELYN W. ; Colney Hall, Norwich.
- 1953 BARD, H. ; 5 Alpha Road, Hutton, Brentwood, Essex.
- 1952 BARKER, W. ; College Road, Stanthorpe, Queensland, Australia.
- 1934 BARLASS, J. C. ; "Langdale," Bellingham Road, Lytham St. Annes, Lancs.
- 1919 BARNARD, T. T., M.C., M.A., F.Z.S. ; Furzebrook, Wareham, Dorset.
- 1950 BARR, THOMAS ; Beanscroft, Kilmarnock, Ayrshire.
- 1952 BARRATT, J. ; 13 High Street, Cleobury Mortimer, Nr. Kidderminster.
- 1951 BARTON, Mrs. H. ; Almonds Close, Hoghton, nr. Preston, Lancs.
- 1951 BATEMAN, A. R. ; 17 Conging Street, Horncastle, Lincs.
- 1952 BATES, C. ; Norton Cottage, Peter Lane, Warley, Halifax, Yorks.
- 1952 BATES, H. J. ; Palos Verdes Bird Farm, 4126 Pacific Coast Highway, Waleria, California, U.S.A.
- 1953 BATH, P. C. ; High Barns Farm, Roxton, Beds.



- 1951 BATHAM, W. H., F.Z.S. ; 127 Dorchester Waye, Hayes, Middx.  
 1945 BATY, I. ; 21 North Road, Ponteland, Newcastle-on-Tyne.  
 1950 BAUER, Dr. HERMAN, M.D. ; Beethovenstrasse 5, Beuel-Bonn, Rhine, Germany.  
 1952 BAUER, J. ; 9116 E. Glendon Way, Rosemead, California, U.S.A.  
 1947 BEAUCHAMP, P. W., F.Z.S. ; 16 Chantry Lane, Bromley, Kent.  
 1923 BEEVER, G. ; High Croft, Wakefield Road, Upper Cumberworth, Huddersfield.  
 1926 BELL, W. DENNIS ; Basset Manor, Checkendon, Oxon.  
 1948 BELLARS, C. G. ; 55 Riley Road, Overport, Durban, South Africa.  
 1951 BENDER, M. F. ; 458 Boon Street, Cadillac, Michigan, U.S.A.  
 1952 BENEDICT, B. ; 96 Hamilton Terrace, St. John's Wood, N.W. 8.  
 1949 BENJAMIN, E. F. ; Sunny Cot, Trowbridge Road, Bradford-on-Avon, Wilts.  
 1951 BENNETT, C. ; 19 Fairfield Avenue, Bollington, nr. Macclesfield.  
 1946 BENNETT, Mrs. M., F.Z.S. ; 3 Adversane Road, Worthing, Sussex.  
 1906 BERESFORD-WEBB, G. M. ; Norbryght, South Godstone, Surrey.  
 1953 BERRAWS, ; 49 Englested Close, Birmingham 20.  
 1921 BEST, C. ; Bank House, Kirkgate, Newark, Notts.  
 1949 BEST, R., F.Z.S. ; Montclare, Furze Hill Road, Torquay.  
 1952 BETTISON, L. J. ; Oliver, B.C., Canada.  
 1953 BEULCKE, M. ; 54 Jan Breijdellaan, Kortrijk, Belgium.  
 1939 \*BHAVNAGAR, RAOL SHRI DHARMAKUMARSINHJI, F.Z.S., M.B.O.U. ; Dil Bahar, Bhavnagar, Saurashtra, India.  
 1951 BHAVNAGAR, YUVARAJ SHRI VIRBHADRASINGHJI OF ; Nilambag Palace, Bhavnagar, Saurashtra, India.  
 1952 BIALLOSTERSKI, W. ; Kruidbergerweg 99, Santpoort, Holland.  
 1945 BIRCH, P. A., F.Z.S. ; "Avian Vale," Dodford, Nr. Bromsgrove, Worcs.  
 1951 BIRD, E. A. ; 156 West 5900 South, Murray 7, Utah, U.S.A.  
 1954 BIRD, L. ; 70 Blaketown, Seghill, Northumberland.  
 1952 BIRD, W., F.R.P.S., F.I.B.P. ; 46 Manchester Street, W. 1.  
 1948 BIRRELL, Mrs. J. DALZIEL ; Green Corner, Pen Selwood, Nr. Wincanton, Somerset.  
 1950 BIRTLES, ALBERT ; 169 Royds Street, Rochdale, Lancs.  
 1952 BLAAUW, A. F. H., O.B.E. ; "de Wissel," Rysbergen (N.-B.), Holland.  
 1951 BLACKER, R. W. ; North Grange, Skirlaugh, Hull, Yorks.  
 1937 BLAND, W. P. ; 3 Station Approach, Meols, Hoyle, Cheshire.  
 1949 BLOCK, S. ; Rainbow Aviaries, 31 Dundurn Place, Winnipeg, Manitoba, Canada.  
 1951 BLOOM, R. ; Hall Common, Ludham, Norfolk.  
 1946 BLYTHE, Hylton ; 5 The Avenue, Flitwick, Beds.  
 1950 BOBRINSKOY, Count, M.A., M.B.O.U. ; 7 Penywern Road, London, S.W. 5.  
 1949 BONNER, Miss Kay ; 61 Chase Road, Oakwood, N. 14.  
 1940 BONNY, J. W. ; Springfield, 166 Whitegate Drive, Blackpool, Lancs.  
 1953 BOOTH, W. ; Regat House, Lower Leigh Road, Daisy Hill, Westhoughton, Nr. Bolton, Lancs.  
 1911 BOURKE, Hon. Mrs. G. ; Rotherend, Rotherfield Road, Henley-on-Thames.  
 1951 BOURNE, Mrs. V. M. ; 78 Idmiston Road, West Norwood, S.E. 27.  
 1948 BOWLES, D., B.Sc., F.Z.S. ; Zoological Park, Murrayfield, Edinburgh 12.  
 1953 BOYD, W. J. ; 15 Unity Street, Carrickfergus, Belfast.  
 1950 BRADDICK, B. ; 9 Mayfield Terrace, Moss Road, Askern, Doncaster.  
 1947 BRADFORD, P. A. ; King's Arms, High Street, Wandsworth, S.W. 18.



- 1951 BRADLEY, R. H. ; 13 Waubesa Street, Madison, Wisconsin, U.S.A.  
 1950 BRAIN, William, F.Z.S. ; Haynes, 30 Rushworth Road, Reigate, Surrey.  
 1953 BRATLEY, C. H. ; 14 The Ridge, Woodlands, Nr. Doncaster.  
 1951 BRATLEY, G. W. ; 39 Westfield Avenue, Pontefract, Yorks.  
 1953 BRIDEAUX, H. G. ; Haigh-Moor, La Rocque, Jersey, C.I.  
 1950 BREESE, PAUL L. ; Honolulu Zoo, Kapiolani Park, Honolulu 15, Territory of Hawaii.  
 1953 BROADBENT, W. ; 13 Pine Grove, Southport, Lancs.  
 1949 BROCK, DONALD S. ; 5840 Seminary Court, Oakland 5, California, U.S.A.  
 1949 BRONSON, J. L. ; (Address unknown.)  
 1933 BROOKES, Miss F. C. ; Massam Hall, Old Leake, Boston, Lincs.  
 1938 BROUGHTON, Major the Hon. HENRY, F.Z.S. ; Bakenham House, Englefield Green, Surrey.  
 1931 BROWN, E. J. ; 29 Dean Road, Bitterne, Southampton.  
 1946 BROWN, RALPH ; The Pleasants, Aberdour, Fife, Scotland.  
 1950 BROWN, Dr. REGINALD B. ; 6 Barker Street, Newcastle, N.S.W., Australia.  
 1924 BROWN, W. FERRIER ; 85 Yew Tree Road, Southborough, Kent.  
 1952 BROWN, W. G. ; 8 Carrick Drive, North Mount Vernon, Glasgow, E. 2.  
 1947 BRUYNEEL, J. ; Domaine de Steenokkerzeel, Régie, Belgium.  
 1942 \*BRYCE, Mrs. PETER COOPER ; Florestal, Hope Ranch, Santa Barbara, Calif., U.S.A.  
 1928 BUCHANAN, A. ; Viewbank, 33 Townhill Road, Dunfermline, Fife.  
 1938 BUCKINGHAM JONES, C., LL.M. ; Dibrugarh, Assam, India.  
 1953 BUNTON, Dr. P. ; "Elim," P.O. Addo, Cape Province, South Africa.  
 1953 BURBRIDGE, J. H. ; Ambleside Water Gardens and Aviaries, Lower Weare, Axbridge, Somerset.  
 1945 BURGIS, BRIAN ; Carroll Crescent, Grange, Brisbane, Queensland, Australia.  
 1952 BURTON, M., D.Sc. ; British Museum (Natural History), Cromwell Road, S.W. 7.  
 1953 BURY, THE VISCOUNTESS, J.P. ; Mount Stewart, Newtownards, Co. Down, N. Ireland.  
 1947 \*BUTE, The Most Hon. the Marquess of, F.Z.S., M.B.O.U. ; Kames Castle, Isle of Bute, Scotland.  
 1942 BUXTON, J. LEAVESLEY, F.Z.S. ; Brightlea, 227 Streetsbrook Road, Solihull, Birmingham.
- 1953 \*CAFFERTY, Miss D. I. ; 3526 North Reta Avenue, Chicago 13, Ill., U.S.A.  
 1951 CAMPBELL, G. S. ; 137 Shirley Road, East Croydon.  
 1933 CAMPEY, A. D., B.E.M. ; 117 Grovehill Road, Beverley, Yorks.  
 1954 CARLSSON, T. ; Skolgatan 9, Malmberget, Sweden.  
 1918 CARR, PERCY ; Ormond Lodge, Newbold-on-Stour, Nr. Stratford-on-Avon.  
 1952 CARR, W. H. ; Murray Lodge, Newmarket, Suffolk.  
 1952 CARTHEW, W. R. ; P.O. Box 49, Vereeniging, South Africa.  
 1950 CARTWRIGHT, K. G. ; "The Gables," 10 Brick-Kiln Street, Quarry Bank, Nr. Brierley Hill, S. Staffs.  
 1953 CASTLE, D. F. ; "Clive Cottage," Stockens Green, Knebworth, Herts.  
 1952 CAULKINS, D. P. ; c/o Bankers Trust Co., 16 Wall Street, New York 15, N.Y., U.S.A.  
 1950 CHADWICK, Burnard ; Longsight Lodge, Redgate Lane, Manchester 12.  
 1953 CHALLINOR, R. ; 387 Alton Street, Crewe, Ches.



- 1932 \*CHAPLIN, The Right Hon. the Viscount, F.L.S. F.Z.S., M.B.O.U., ; The Zoological Society of London, Regent's Park, N.W. 1.
- 1951 CHEESMAN, M. R. ; 4888 South 13th East Street, Salt Lake City 7, Utah, U.S.A.
- 1930 CHICHESTER, Mrs. H. G. ; Galgorm Castle, Ballymena, Co. Antrim, N. Ireland.
- 1914 CHRISTIE, Mrs. G. ; Kellas, By Elgin, Morayshire.
- 1945 CLARENCE, Capt. A. A. ; Nunton House, Nr. Salisbury.
- 1949 CLARK, G. T., "Maidsmere," Finstall, Bromsgrove, Worcs.
- 1942 CLARK, Mrs. G. T., F.Z.S. ; "Maidsmere," Finstall, Bromsgrove, Worcs.
- 1951 CLARK, J. A. ; 106 Derby Road, Spondon, nr. Derby, Derbyshire.
- 1953 CLARKE, A. J., F.R.I.C.S. ; Foxhole Cottage, Llanbedrog, Nr. Pwllheli, S. Caernarvonshire.
- 1953 CLAYDEN, Capt. C. N. ; The Middlesex Regt., Inglis Barracks, Mill Hill, N.W. 7.
- 1953 CLAYTON, J. C. ; 127 Egerton Street, Farnworth, Nr. Bolton, Lancs.
- 1952 CLAYTON, S. ; Westways, 130 Bawtry Road, Doncaster.
- 1950 CLAYTON, T. L. ; 75 Park Road, Hampton Hill, Middx.
- 1938 CLEMENTS, O. E., L.D.S., R.C.S.(Eng.) ; 1 Bayswater Road, Highlands, Salisbury, Southern Rhodesia.
- 1949 CLEMITSON, J. W. ; 25 St. Paul's Gardens, Whitley Bay, Northumberland.
- 1953 COOMBER, M. S. ; Valenciennes, Burwash, Sussex.
- 1950 COOMBS, E. W., F.Z.S. ; "The Woodlands," Walderslade Road, Nr. Chatham, Kent.
- 1953 COOPER, Mrs. F. D. ; Dunstan Lodge, Churchdown, Gloucester.
- 1952 COOPER, J. T. ; Hall Farm, Outwell, Nr. Wisbech.
- 1951 CORBETT, R. C. U. ; Itchen Abbas Cottage, nr. Winchester, Hants.
- 1953 CORLETT, J. ; Rt. 6—Box 647, Mobile, Alabama, U.S.A.
- 1942 CORWIN, SAUL C. ; 165 Broadway, New York 6, New York, U.S.A.
- 1950 COWARD, D. M. ; "Karibu," Longfellow Avenue, Wellsway, Bath.
- 1925 COWLEY, H. ; The Manor House, Bubbenhall, Nr. Coventry.
- 1947 COWLISHAW, A. G. ; The Chalet, 35 Aylesbury Street, Bletchley, Bucks.
- 1933 COX, Mrs. B., F.Z.S. ; Barncrosh, Castle Douglas, Scotland.
- 1952 COYNE, Capt. S. F. ; 2nd Bn. The Sherwood Foresters, Meanee Barracks, Colchester, Essex.
- 1951 CRAGGS, L. ; 15 Henderson Street, Darlington, Co. Durham.
- 1953 CRAIG, J. ; 111 Glen Avenue, Larkhall, Lanarkshire.
- 1946 CREWES, T. ; "Walton Croft," Manor Way, Beckenham, Kent.
- 1929 CROFTS, ROBERT T. ; 85 Reeves Avenue, Cross Heath, Newcastle, Staffs.
- 1949 CRONE, G. H. ; "Vyverhof," Lage Vuursche, Holland.
- 1948 CUMMINGS, W. D. ; The Keston Foreign Bird Farm, Ltd., Brambletye, Keston, Kent.
- 1952 CUNNINGHAM, A., F.Z.S. ; 84 Hamilton Road, East Finchley, N. 2.
- 1928 CURA, L., F.Z.S. ; Water End, Hemel Hempstead, Herts.
- 1953 CURNOW, E. T. ; 3102 North 24th Street, Phoenix, Arizona, U.S.A.
- 1952 CURTO, F. ; North Side Conservatory-Aviary, West Park, Pittsburgh 12, Pennsylvania, U.S.A.
- 1939 DABNER, P. L. ; 56 Arkwright Road, Sanderstead, Surrey.
- 1951 D'AETH, A. H., F.Z.S. ; 45 Ormonde Terrace, Regent's Park, N.W. 8.
- 1946 DALBORG-JOHANSEN, J. ; Dyrhaage, Graabrødreplads 6, Odense, Denmark.
- 1953 DALE, S. J. A. ; Wagg Street, Congleton, Cheshire.



- 1949 DALGETY, C. T., M.B.O.U. ; Radnall Mill, Baldock, Herts.  
 1937 DALLOW, F., M.B.E. ; 13 Hillingdon Road, Stretford, Manchester.  
 1948 DANHIER, M. F. ; 182 Chaussee de Charleroi, Brussels, Belgium.  
 1950 DARMAN, H. J., F.Z.S., F.R.H.S. ; 44 Fraser Road, Walthamstow, London, E. 17.  
 1932 DARNTON, Mrs. I. ; Sissinghurst Court, Cranbrook, Kent.  
 1927 DAVIS, Sir GODFREY, I.C.S., F.Z.S. ; Beresfords, Boughton Monchelsea, Nr. Maidstone, Kent.  
 1941 DAVIS, H. H. ; Little Stoke, Patchway, Bristol.  
 1950 DAY, J. N. E., M.Sc., Ph.D. ; 18 Home Wood Road, St. Albans, Herts.  
 1952 DEACON, D. R. ; 41 Hilders Road, Western Park, Leicester.  
 1951 DEAN, A. W. S. ; Sudbrook Manor, Sudbrook, Grantham.  
 1952 DEANS, G. ; 3 New Edinburgh Road, Dalkeith, Midlothian.  
 1953 D'EATH, J. O. ; The Grove, Hadley, Barnet, Herts.  
 1953 DE BEAUMONT, Mrs. G. ; Blairlogie House, Menstrie, Clackmannanshire, Scotland.  
 1949 DE COOMAN, Rev. H. J. J. ; 1 Pontstraat, St. Martens-Lerne, Oost Vlaanderen, Belgium.  
 1917 DECOUX, A. ; G ry, Aixe-sur-Vienne, Haute-Vienne, France.  
 1948 DE GOEDEREN, G. ; Orteliuskade 74, Amsterdam, Holland.  
 1950 DE JONG, L. ; Plantage Kerklaan 40, Amsterdam, Holland.  
 1903\*\* DENNIS, Mrs. H. E. ; Lower Nash, Nutbourne, Pulborough, Sussex.  
 1924 DENNY, Mrs. H., C.B.E., J.P. ; The Chantry, Horsham, Sussex.  
 1930 DE PASS, GERALD V., F.Z.S. ; The Old Kennels, Satwell, Nr. Henley-on-Thames.  
 1932 DE PLEDGE, Miss BERYL ISABEL, F.Z.S. ; (Address unknown).  
 1948 DESAI, PRADYUMAN K. ; Takhteshwar Plot, Bhavnagar, Saurashtra, India.  
 1945 DEXTER, J. E., M.M. ; Lamorna, Ongar Road, Pilgrims Hatch, Nr. Brentwood, Essex.  
 1951 DIEDRICH, W. W. ; Dierenpark Wassenaar, Rijkstraatweg 667, Wassenaar, Holland.  
 1953 DOLTON, K. W. ; Sundown, Oakleigh Avenue, Hallow, Worcester.  
 1954 DOMINGUEZ, Dr. R. H. ; Box 248, Utuado, Puerto Rico.  
 1949 DOMINICK, GEORGE D. ; 13 Nokomis Circle, Knoxville 16, Tennessee, U.S.A.  
 1924 \*DOOLY, THOMAS L. S. ; Whimbrel, Kirklake Road, Formby, Nr. Liverpool.  
 1953 DOSSCHE, A. ; 2 rue des Architectes, Mont-St. Amand, Gand, Belgium.  
 1951 DOUGHTY, E. C. ; 53 Bath Street, Market Harborough, Leicester.  
 1947 DOVER, G. W. ; 12 Trinity Terrace, Abergavenny, Mon.  
 1947 DRING, W. T., F.Z.S. ; 12 East Park Street, Chatteris, Cambs.  
 1953 DRING, Mrs. W. T. ; 12 East Park Street, Chatteris, Cambs.  
 1947 DUFOUR, Colonel JOHN ; 167 Avenue de Belgique, Antwerp, Belgium.  
 1939 DULANTY, BRIAN H., F.Z.S. ; Fisheries Cottage, Chorley Wood, Herts.  
 1952 DUNCAN, P. ; 5 Viewfield Place, Perth, Scotland.  
 1922 DUNMORE, OSCAR E., F.Z.S. ; 22 Kingsway Road, Leicester.  
 1930 DUNSTER, Capt. J. E. ; Bucklebury Village, Nr Reading, Berks.  
 1927 DUYZEND, P. ; Koppeldijk 24, Huize, "Casarca," Zeist, Holland.  
 1953 DVORAK, K. ; 305 N. Kilbourn Avenue, Chicago 24, Ill., U.S.A.  
 1951 EASTICK, D. M. ; The Mill House, Sonning, Berks.  
 1936 EAVES, W. L., F.Z.S. ; 581 Warwick Road, Solihull, Birmingham.  
 1953 EDEN, G. R. ; "Silver Birches," Temple Wood Lane, Farnham Common, Slough, Bucks.



- 1953 EFROS, S. ; 4907 Rodeo Road, Apt. 1, Los Angeles, Calif., U.S.A.  
 1949 ELEEN, T. ; 29 Desborough Crescent, West Derby, Liverpool.  
 1926 ELWES, Mrs. ROBERT ; Little Congham, King's Lynn, Norfolk.  
 1949 ENEHJELM, C. AF, C.M.Z.S.; Högholmens Djurgård, Helsingfors, Finland.  
 1935 ENGELBACH, Dr. PIERRE ; 64 rue Saint-Denis, Colombes (Seine), France.  
 1950 EVANS, F. J., F.Z.S. ; 51 Brunswick Road, Leyton, E. 10.  
 1929 EVANS, Miss JOAN ; Townsend, Middle Wallop, Hants.  
 1950 EVANS, R. E., M.B., Ch.B. ; 12 Kirklee Terrace, Glasgow, W. 2.  
 1953 EVANS, T. H. ; Cedar Villas, Ruabon Road, Johnstown, Nr. Wrexham,  
     N. Wales.  
 1951 EVERETT, H. C. ; 7932 Old River Road, Forestville, Calif., U.S.A.  
  
 1953 FAIRIE, G. W. ; 76 Stirling Road, Tullibody, Clackmannanshire, Scotland.  
 1949 FANCUTT, FRANK, F.Z.S. ; 86 Linden Drive, Alvaston, Derby.  
 1946 FAUDELL, C. L. ; 45 Dickason Road, Heathmont, Ringwood, Victoria,  
     Australia.  
 1951 FELSTEAD, Miss M. ; 108 Beulah Road, Thornton Heath, Surrey.  
 1948 FIELD, H. C. ; 79 Weoley Park Road, Selly Oak, Birmingham 29.  
 1950 FIERLAFIJN, J. ; Karel Oomstraat 24, Antwerp, Belgium.  
 1953 FINCH, Colonel H. B. ; "Revesby," Hutton Road, Ash Vale, Surrey.  
 1952 FIORAVANTI, The Marquis ; Bellosguardo 14, Florence, Italy.  
 1952 FIRTH, C. G. ; 28 Brennan Road, Tilbury, Essex.  
 1950 FISHER, A. ; 25 Drapers Field, Coventry.  
 1953 FLAXMAN, G. ; 618 Layard Street, London, Ontario, Canada.  
 1951 FLETCHER, J. ; 6511 Francis Avenue, Seattle, Washington, U.S.A.  
 1935 FLOYD, J. F. M., M.A., M.B.O.U. ; High Bridge Mill, Cuckfield, Sussex.  
 1948 FOGG, H. ; 190 Station Road, Wylde Green, Sutton Coldfield, Nr.  
     Birmingham.  
 1925 FOOKS, F. E. ; Clères, Seine Inférieure, France.  
 1932 FOOKS, H. A. ; Kestrels, Holmshurst, Burwash, Sussex.  
 1951 FORD, J. ; 186 Woolwich Church Street, Woolwich, S.E. 18.  
 1953 FORSTER, T. ; "Edgeley," Westminster Road, Macclesfield, Cheshire.  
 1953 FOSTER, P. ; 7 Irlam Road, Sale, Nr. Manchester.  
 1951 FOTHERGILL, Miss S. A., F.Z.S. ; 8 Whitelands House, Sloane Square,  
     S.W. 3.  
 1952 FOTHERINGHAM, R. ; 16 Fore Street, Johnshaven, Montrose, Scotland.  
 1953 FRAMPTON, P. ; 53 Brunner Road, Broadmeadow, N.S.W., Australia.  
 1953 FRANDSEN, A. C. ; 896 Ruth Drive, Concord, California, U.S.A.  
 1951 FRANK, A. ; "Grantully," De Waal Road, Diep River, Cape Town,  
     South Africa.  
 1933 FRAYNE, RALPH ; 50 Cantley Lane, Bessacarr, Doncaster.  
 1945 FREEMAN, CHARLES R., F.Z.S. ; 7 Valentine Crescent, Caversham,  
     Reading, Berks.  
 1950 FRILING, W. ; Eikelenberg, Brasschaat, Nr. Antwerp, Belgium.  
 1952 FRODSHAM, J. ; The Frythe, Welwyn, Herts.  
 1950 FROST, R. ; The Gravels, Station Road, Brimington, Chesterfield.  
 1908 FROST, WILFRED J. C. ; c/o Zoological Society of London, Regent's Park,  
     London, N.W. 1.  
 1947 FROSTICK, W. B. ; 26 Minster Precincts, Peterborough, Northants.  
 1929 FURNER, A. C. ; Oakdene, 115 Whitaker Road, Derby.  
  
 1950 GADD, J. A. ; 75 Holly Road, Aldershot, Hants.  
 1948 GALLAND, JOHN F. ; 197 Fraser Street, Howick, Pietermaritzburg, Natal,  
     South Africa.



- 1953 GARDENER, L. F. ; 10 New Way, Pinelands, Cape Town, S. Africa.  
 1941 GARDNER, A. H. ; 21 Kingsland Road, Strathfield, Sydney, N.S.W., Australia.  
 1951 GARNER, R. ; 1 Arno Vale Gardens, Woodthorpe, Nottingham.  
 1951 GARRATT, J. C. ; Wychwood Farm, Shermanbury, nr. Horsham, Sussex.  
 1949 GARY, F. L. ; Earlham, Columbus, New Jersey, U.S.A.  
 1950 GASK, Miss D., F.Z.S. ; "Twa Noon," Lincoln Road, Chalfont-St.-Peter, Bucks.  
 1950 GAUNT, M. W. ; 48 Ainsdale Road, Western Park, Leicester.  
 1950 GAUNTLETT, PHILIP W. ; Bury Farm, Hertingfordbury, Herts.  
 1948 GEERTSEMA, Lt.-Colonel C. C. ; Soestdijk Palace, Baarn, Holland.  
 1950 GEMMILL, JOHN ; Aikenhead, Kilmarnock, Ayrshire.  
 1948 \*GERARD, Hon. ROBERT, M.B.O.U. ; Blakesware, Ware, Herts.  
 1911 GHIGI, Professor ALESSANDRO, C.M.Z.S., M.B.O.U. ; Laboratorio di Zoologia Applicata Alla Caccia, Università di Bologna, S. Giacomo 9, Bologna, Italy.  
 1948 GIBSON, R. H. ; R.R.2, Box 336, St. Helena, Calif., U.S.A.  
 1953 GILBERT, R. N. ; 324 Hampton Avenue, Salt Lake City, Utah, U.S.A.  
 1953 GILBERT, R. S. ; 160 Heath Park Road, Gidea Park, Essex.  
 1950 GILBERT, W. O., F.Z.S. ; 31 Douglas Road, Luton, Beds.  
 1950 GILBERT, Mrs. W. O., F.Z.S. ; 31 Douglas Road, Luton, Beds.  
 1948 GILL, J. M. ; 324 Lady Margaret Road, Southall, Middx.  
 1953 GILLAN, A. ; 66 Broomhill Road, Aberdeen, Scotland.  
 1946 GILLEN, JOHN ; Ballycraigy, Ballymena, Co. Antrim, N. Ireland.  
 1953 GJESSING, G. A. ; "Woodberry Hill," Konnerud, Drammen, Norway.  
 1928 GLENISTER, A. G., F.Z.S., M.B.O.U. ; The Barn House, East Blatchington, Seaford, Sussex.  
 1950 GLENN, Mrs. EVA ; c/o Justrite Pet Foods, Ltd., P.O. Box 39, Station B., Hamilton, Ontario, Canada.  
 1931 GLOVER, P. H., F.Z.S. ; Oparaeana Street, Ngongotaha, Rotorua, New Zealand.  
 1953 GLOVER, P. J. ; Delamore Farm, Cornwood, S. Devon.  
 1951 GODELMAN, R. ; Murcocks Farm, Fryerning, Ingatestone, Essex.  
 1952 GODSEY, R. E. ; Rt. 8, Box 107-A, Greenville, So. Car., U.S.A.  
 1950 GODWIN, J. H. ; 21 Vincent Road, Osterley, Isleworth, Middx.  
 1950 GOETZ, L. D. ; 2537 N. Austin Blvd., Chicago 39, Illinois, U.S.A.  
 1950 GOMM, F. A. ; The Cave, Amersham Road, Hazlemere, High Wycombe, Bucks.  
 1953 GOOD, E. H. ; Buckland Fields, Lymington, Hants.  
 1953 GOOD, Mrs. E. H. ; Buckland Fields, Lymington, Hants.  
 1933 GOODALL, A. W. ; 33 Stuart Avenue, Hunts Cross, Liverpool.  
 1945 GOODWIN, DEREK, M.B.O.U. ; Toft, Monk's Road, Virginia Water, Surrey.  
 1920 GOODWIN, TOM ; "Aves," Kiln Lane, Ripley, Surrey.  
 1953 GOPSILL, R. H. ; 152 Wyggeston Street, Burton-on-Trent.  
 1945 GORDON, Mrs. BEATRICE HOOD CLAESON, F.Z.S. ; Cluny Castle, Monymusk, Aberdeen.  
 1951 GORDON, W. H., Jr. ; 4412 West Sixteenth Street, Lubbock, Texas, U.S.A.  
 1923 \*GOSSE, LADY ; Aldgate, South Australia.  
 1949 GOUGH, L. ; 101 Claypit Lane, West Bromwich, Staffs.  
 1952 GRAHAM, J. ; Bushey Park, Ballyskeagh, Newtownards, Co. Down, Ireland.  
 1935 GRANT, FRANK ; Parklands, Stoughton Lane, Evington, Leicester.  
 1953 GRANTHAM, R. H. ; 13 St. Wilfrids Road, New Barnet, Herts.



- 1951 GRAY, J., A.R.I.B.A. ; "Braemar," Dryburn Road, Durham Moor, Durham.
- 1950 GRAY, W. ; 4 Windsor Close, Trowell, Notts.
- 1952 GREGORY, J. J. ; 66 Carew Road, Hamden, Conn., U.S.A.
- 1952 GRICE, H. ; Mount Pleasant, Hanging Grimston, Kirby Underdale, York.
- 1953 GRIFFITHS, A. V. ; Bryn Awel, Llandyssul, Cards.
- 1950 GRIFFITHS, GRAYDON ; School House, Great Brickhill, Bletchley, Bucks.
- 1946 GRIFFITHS, WILLIAM ; Downs End, 152 Worple Road, Wimbledon, S.W. 19.
- 1947 \*GRISWOLD, JOHN A. ; The Zoological Society of Philadelphia, 34th Street and Girard Avenue, Philadelphia 4, Pa., U.S.A.
- 1951 GROUND, W. J. ; "Albion House," 61 Pinchbeck Road, Spalding, Lincs.
- 1917 GROVES, Hon. Mrs. McGAREL ; Battramsley House, Lymington, Hants.
- 1951 GRUBER, H. F., F.R.Z.S. (Scot.) ; 9 Churchill, Morningside, Edinburgh 10,
- 1928 GUBBAY, Mrs. MAURICE ; c/o A. Ezra, Esq., Foxwarren Park, Cobham, Surrey.
- 1951 GUDMUNDSSON, Dr. F. ; Museum of Natural History, P.O. Box 532, Reykjavik, Iceland.
- 1908 GULBENKIAN, C. S. ; "Kent House," Great Titchfield Street, Oxford Circus, London, W. 1.
- 1947 GULLIVER, V. S. ; 33 Vale Road, Aylesbury, Bucks.
- 1951 GURDEN, R. W. ; 23 East St. Helens Street, Abingdon, Berks.
- 1927 GURNEY, Miss DIANA ; North Runcion Hall, King's Lynn.
- 1942 GUY, CHARLES P. ; High Lodge, Fullaford, Buckfastleigh, S. Devon.
- 1939 HADDEN, NORMAN G. ; Underway, West Porlock, Somerset.
- 1952 HADLOW, L. A. ; Barbary Farm, Norton, Faversham, Kent.
- 1952 HADZIMA, J. ; 2059 Sweetwater Avenue, Spring Valley, California, U.S.A.
- 1951 HAITH, J. E. ; Park Street, Cleethorpes, Lincs.
- 1948 HALE, O. ; Laithfield, Digswell, Welwyn, Herts.
- 1951 HALL, R. E., M.D. ; (Address unknown.)
- 1943 HALLSTROM, Sir EDWARD, F.R.Z.S., C.M.Z.S. ; 462 Willoughby Road, Willoughby, Sydney, N.S.W., Australia.
- 1937 HALVERSON, A. W. ; 5705 West Erie Street, Chicago 44, Ill., U.S.A.
- 1926 HAMPE, ALEX ; 13a Grub am Forst bei Coburg, Bavaria, American Zone, Germany.
- 1952 HANNING, W. H., Jr. ; Waukon, Washington, U.S.A.
- 1946 HANSEN, PAUL ; Gormsgade 3, I. Sal, Odense, Denmark.
- 1949 HANSEN, ROBERT J. ; P.O. Box 46, Gonzales, Calif., U.S.A.
- 1952 HANSEN, SVEND T. ; 101 Amager Landevej, Kastrup, Amager, Denmark.
- 1946 HARDING, C. F. ; Brooklyn Stores, Otago Terrace, Larkhall, Bath.
- 1953 HARDING, I. G. ; 61 Hawkesley Drive, Northfield, Birmingham 31.
- 1948 HARDY, G. C., Jr. ; 61-18th Avenue East, New Westminster, B.C., Canada.
- 1942 HARE, TOM, M.D., B.V.Sc., M.R.C.V.S., M.B.O.U. ; 529a Finchley Road, London, N.W. 3.
- 1949 HARMAN, H. J. ; 10 Haydon Road, Dagenham, Essex.
- 1950 HARMON, Mrs. VERA ; 3601 West 102nd Street, Inglewood 2, Calif., U.S.A.
- 1950 HARRIS, A. J., Jr. ; Rte. 1—Box 24, Pendleton, Virginia, U.S.A.
- 1951 HARRIS, Mrs. E. ; 11 Prince Albert Street, Dudley, Worcs.
- 1953 HARRIS, N. H. C. ; Natal Spruit, Transvaal, S. Africa.
- 1952 HARRISON, B. ; Box 10, Lidingö 1, Stockholm, Sweden.
- 1945 HARVEY, ARTHUR W. H. ; Rydal, Long Rock, Penzance, Cornwall.



- 1930 HASTINGS, P. H. ; 182 Sultan Road, Landport, Portsmouth.  
 1951 HATCH, H. L. ; The Dudley Zoological Society, Dudley, Worcs.  
 1952 HAWKE, E. H. ; Box 796, Lourenco Marques, Portuguese East Africa.  
 1953 \*HAWLEY, W. M. ; 703-15th Avenue, New Westminster, B.C., Canada.  
 1953 HAYES, J. ; 71 Carver Street, Boston, Mass., U.S.A.  
 1946 HAYWARD, Mrs. D. A. ; Invermay, Highland Avenue, Brentwood, Essex.  
 1950 HEARD, A. C. ; The Cedars, Baschurch, Shrewsbury.  
 1947 HEATH, R. E., B.A., M.B.O.U. ; 2 Pembroke Court, Edwardes Square, W. 8.  
 1949 HEFT, ELMER A. ; Green Lake, Wisconsin, U.S.A.  
 1952 HEMPSTED, H. J. ; 2 New Houses, Bacton Road, North Walsham, Norfolk.  
 1952 \*HENDERSON, W. B. ; Viewfield House, Bankfoot, Perthshire.  
 1945 HENRY, B. R., M.B., B.Ch., D.H.P. ; Four Winds, Comber, Belfast, N. Ireland.  
 1952 HENRY, G. M. ; Ellagalla, Church Enstone, Oxon.  
 1952 HEPWOOD, W., F.Z.S. ; "Dogberry," 11 Tott Yew Road, Lower Willingdon, Eastbourne.  
 1951 HERMITAGE, R. ; 53 Burnt Oak Terrace, Gillingham, Kent.  
 1953 HEWITT, R. A. ; 98 Berkshire Road, Hackney Wick, E. 9.  
 1952 HIGHT, G. L., Jr. ; Box 271, Rome, Georgia, U.S.A.  
 1951 HILL, K. ; 93 Elmhurst Drive, Hornchurch, Essex.  
 1952 HILL, R.C. ; "Tarrants," Wothorpe, Stamford, Lincs.  
 1939 HILL, W. C. OSMAN, M.D., Ch.B., F.L.S., F.Z.S. ; Lancaster House, Prince Albert Road, London, N.W. 8.  
 1945 HINDLE, E., M.A., Sc.D., F.R.S., F.L.S., F.Z.S. ; The Athenaeum, Pall Mall, London, S.W. 1.  
 1929 HIRST, A. ; Box 262, G.P.O., Sydney, N.S.W., Australia.  
 1926 HIRST, ROBERT S., F.Z.S. ; Swincliffe House, Gomersal, Nr. Leeds.  
 1953 HOBSON, Mrs. D. A. ; Warren Cottage, Totland Bay, Isle of Wight.  
 1947 HODGES, J. R., D.Ph., F.Z.S. ; 17 Bloomsbury Square, W.C. 1.  
 1922 HOLLAS, Mrs. K. E., F.Z.S. ; Hothersall Hall, Ribchester, Nr. Preston, Lancs.  
 1930 \*HOLLOND, Miss GLADYS M. B. ; Great Ashfield House, Bury St. Edmunds, Suffolk.  
 1943 HOLLOWAY, JACK, F.Z.S. ; 59 Holyrood Gardens, Stag Lane, Edgware, Middx.  
 1951 HOLM, BJÖRN ; Kyrkogatan 5, Kiruna, Sweden.  
 1953 HOLTER, D. A. ; 221-31st Street, Manhattan Beach, Calif., U.S.A.  
 1951 \*\*HOPKINSON, Miss E. M. ; "Wynstay," Balcombe, Nr. Haywards Heath, Sussex.  
 1928 HORNE, DOUGLAS PERCY ; Audley Lodge, Addlestone Park, Addlestone, Surrey.  
 1948 HOSKEN, JOHN H. ; P.O. Box 667, Johannesburg, South Africa.  
 1954 HOSKINS, N. ; 69 Hewens Road, Hillingdon, Middx.  
 1934 HOUSDEN, Major E. F., M.C., T.D., M.A., F.Z.S. ; 126 Bessborough Road, Harrow.  
 1948 HOUSDEN, EDWIN J. T. ; Mulberry Hill, Baughurst, Basingstoke, Hants.  
 1933 HOUSDEN, LESLIE, O.B.E. ; Mulberry Hill, Baughurst, Basingstoke, Hants.  
 1942 HOVELL, S. ; 29 Wood Lane, Long Sutton, Spalding, Lincs.  
 1952 HUDDART, B. J., M.B.O.U. ; Shirley House, Marsh Lane, Taplow, Bucks.  
 1950 HUGHES, N. D. ; 1 High Street, Hampton Hill, Middx.  
 1950 HUMPHRYS, F. ; Dorothy Café, Commercial Street, Maesteg, Bridgend, Glam.



- 1953 HUNT, W. G. ; 26 Middle Street, Brixham, Devon.  
 1939 HURLBURT, Dr. W. E. ; Vineland, Ontario, Canada.  
 1947 HUYTON, A. E. ; 55 Victoria Road, Great Crosby, Liverpool 23.  
  
 1940 ILES, GERALD, F.Z.S. ; Zoological Gardens, Belle Vue, Manchester 12.  
 1939 INDGE, H. J., F.Z.S. ; Trimstone, Thorpe, Nr. Egham, Surrey.  
 1953 INGLIS, J. F. ; Montgarrie Road, Alford, Aberdeenshire.  
 1948 IRVING, G. J. ; 2 Grove Road, Egremont, Cumberland.  
 1953 IRVING, N. S. ; 3 Hassall Road, Sandbach, Cheshire.  
 1952 \*ISAKSON, Dr. E. W. ; 168 West 12th Street, Ogden, Utah, U.S.A.  
 1926 ISENBERG, A. H. ; 451 Portola Road, Woodside, California, U.S.A.  
  
 1950 JACKSON, ROBERT, F.Z.S. ; 1 Park Avenue, Timperley, Cheshire.  
 1951 JACOBSON, OWE ; Kaprifolgatan 4, Malmö, Sweden.  
 1953 JAKOBSSON, Miss D. A. ; Summerlands Cottage, Ferndown, Wimborne, Dorset.  
 1950 JAMES, N. ; 1 Central Drive, Fenton, Stoke-on-Trent.  
 1942 JANSON, CHARLES W. ; 16 Wilton Crescent, London, S.W. 1.  
 1953 JASAWALLA, C. M. ; "Hill Crest," 14 Salisbury Park, Poona, India.  
 1947 \*JASDAN, H. H. YUVRAJ SHREE SHIVRAJ KHACHAR ; The Palace, Jasdan (Kathiawar), India.  
 1953 JOHNSON, D. M. ; Rte 4, Box 312, Port Orchard, Washington, U.S.A.  
 1952 JOHNSON, F. E. B. ; "Willow Close," Mill Lane, Hulcote, Bletchley, Bucks.  
 1951 JOHNSTONE, S. T. ; The Severn Wildfowl Trust, The New Grounds, Slimbridge, Glos.  
 1949 JONES, C. G. ; 8416 N.E. 3rd Place, Route 1, Bellevue, Washington, U.S.A.  
 1933 JONES, F. Terry, F.Z.S. ; Leckford Abbas, Stockbridge, Hants.  
 1953 JONES, Cpl. M. LEE ; R.A. 52100460, 915th Medical Co. Ambulance (Sep), A.P.O. 165, U.S. Army, Germany.  
 1934 JONES, S. B. ; 265 Northway, Maghull, Nr. Liverpool.  
 1950 JONES, Major V. DILWYN ; "Sherwood," Grosvenor Road, Llandrindod Wells, Radnor.  
 1954 JØRGENSEN, B. ; International Zoo Library, Zoo-Centret, Lyngby, Denmark.  
  
 1952 KAVANAGH, G. ; Ormonde House, Arklow, Co. Wicklow, Ireland.  
 1953 KEELING, C. H. ; 2 Highfield Terrace, Chesterfield, Derbyshire.  
 1952 KEEP, A. E. ; Avondale, Springfield Lane, Broadway, Worcs.  
 1953 KELL, W. ; 1 Ash Terrace, Leasing Thorne, Bishop Auckland, Co. Durham.  
 1951 KELLOGG, Mrs. F. M. ; R.F.D.1., Pound Ridge, New York, U.S.A.  
 1953 KENDALL, S. B., M.R.C.V.S. ; Weir Cottage, Bridge Road, Chertsey, Surrey.  
 1927 KERR, J. E. ; Harviestoun, Dollar, Scotland.  
 1953 KERSLEY, Mrs. M. ; Little Butts Farm, Cousley Wood, Wadhurst, Sussex.  
 1938 KING, H. T. ; 80 Bedale Road, Sherwood, Nottingham.  
 1953 KINGSLAND, W. F. ; Redding, Connecticut, U.S.A.  
 1950 KINGSTON, W. R. ; Springfields, Betchton, Sandbach, Cheshire.  
 1953 KIRBY, C. ; 3 Hurst Grove, Lidlington, Beds.  
 1950 KIRK, KEITH C. ; 54 Station Road, Sutton-in-Ashfield, Notts.  
 1953 KIRK, Dr. R. S. ; 1 Upper Harley Street, N.W. 1.  
 1948 KIRKALDY, Mrs. M., F.Z.S. ; The Grove, Warley Mount, Brentwood, Essex.



- 1952 KIRKHAM, R. G. ; "The Gables," Wynnsward Park, Clonskeagh, Co. Dublin, Eire.
- 1952 KLAASEN-SÉE, Mrs. M. ; Papaverstraat 42, Bussum, Holland.
- 1950 KNIGHTS, W. A. ; 144 Argyle Street, Cambridge.
- 1928 KNOBEL-HARMAN, Miss M. H., F.Z.S. ; 19 Connaught Square, London, W. 2.
- 1952 KNÖS, C. J. ; Ludvigsborg, Sweden.
- 1954 KRAUS, F. ; Neuried 1, Muenchen 49, Germany.
- 1947 LABDON, B. ; Millberne, Cullompton, Devon.
- 1951 LABELLE, R. ; 832 Beaubien Street East, Montreal, P.Q., Canada.
- 1929 LAIDLAY, J. C. ; Holmwood, Perth, Scotland.
- 1951 LAKE, Dr. F. B. ; The White House, 5 Portsmouth Road, Kingston-on-Thames.
- 1937 LAKE, GEORGE D., M.B.O.U. ; Audreys, Burghfield Common, Reading, Berks.
- 1945 LAMB, A. ; Mount Pleasant, Hexham, Northumberland.
- 1954 LANCE, V. P. ; Route No. 3, Denison, Texas, U.S.A.
- 1952 LAND, S. D. ; 841 St. Helens Road, Over Hulton, Bolton, Lancs.
- 1950 LANGBERG, WALTHER ; Tudskaervej 22, Copenhagen, Vanløse, Denmark.
- 1919 LAW, SATYA CHURN, M.A., Ph.D., F.Z.S., M.B.O.U. ; 50 Kailas Bose Street, Calcutta, India.
- 1952 LAWRENCE, C. C. ; Normacot, Cressing, Braintree, Essex.
- 1930 LAX, J. M. S. ; Southfield, Crook, Co. Durham.
- 1949 LAZZERONI, IVO ; 5034 Templeton Street, Los Angeles 32, Calif., U.S.A.
- 1952 LEDGER, H. G. ; New Town Cottage, Wingham, Kent.
- 1953 LEE, N. A. ; 39 Erdington Road, Blackpool, Lancs.
- 1946 LEMON, Miss E. ; 3007 Wilson Avenue, South Burnaby, B.C., Canada.
- 1952 LESTER, J. W., F.L.S., F.Z.S. ; c/o Zoological Society of London, Regent's Park, N.W. 1.
- 1949 LEVER, H. ; 14 April Street, C-on-M., Manchester 13.
- 1950 LEVY, E. T. ; 22 Crossbow Road, The Lowe, Chigwell, Essex.
- 1946 LEWIS, W. O. ; Milnsbridge, Bicton Heath, Shrewsbury.
- 1952 LIMBERG, HANS ; Harscampstrasse 62, Bad Aachen, Germany.
- 1951 LINDSAY, A. ; 422 Lake Street, Oak Park, Illinois, U.S.A.
- 1953 LINFIELD, W. F. ; Grans. Cottage, Thakeham, Sussex.
- 1951 LIPPENS, LÉON ; Den Hul, 43 Boslaan, Knocke-Le Zoute, Belgium.
- 1952 LITTLECHILD, B. ; 4 Rye Mead Cotts, Rye Road, Hoddesdon, Herts.
- 1941 LIVERMORE, JOHN W. ; 135 East 54th Street, Apt. 11 B., New York City 22, U.S.A.
- 1952 LOAR, J. A. ; 8 Coleridge Road, Wyken, Coventry.
- 1953 LOGAN, F. ; 21 Plantagenet Street, Nottingham.
- 1951 LOUWMAN, P. ; Dierenpark Wassenaar, Rijksstraatweg 667, Wassenaar, Holland.
- 1952 LOVELL, D. R. ; "St. George," 51 Mildred Avenue, Harlington, Hayes, Middx.
- 1927 LOWE, Rev. J. R. ; The Vicarage, Coln Street, Aldwyn, Fairford, Glos.
- 1951 LUCAS, V. J. ; Park House, West Rasen, Market Rasen, Lincs.
- 1947 LUMSDEN, Lt.-Col. WILLIAM V. ; Sluie, Banchory, Aberdeenshire, Scotland.
- 1952 LUTHER, H. M. ; 26 Park Crescent, Regent's Park, W. 1.
- 1947 LYNCH, G., F.Z.S. ; 21 Sunnycroft Road, Hounslow, Middx.
- 1927 LYON, Capt. the Hon. Michael ; Glamis Castle, Glamis, Forfarshire.



- 1951 MABEY, R. N. ; Continental Bank Building, Salt Lake City, Utah, U.S.A.  
1948 MACK, H. G. ; c/o Gilson Manufacturing Co., Ltd., Guelph, Ontario,  
Canada.  
1948 MACKENSEN, RICHARD S. ; Yardley, Pa., U.S.A.  
1953 MACPHIE, D. J. ; Hazel Cottage, Petersham, Surrey.  
1953 MACRAE, Miss H. I. ; 15 Forbes Road, Edinburgh 10, Scotland.  
1947 MAITLAND, Miss M. C. ; North Lodge, Goring-by-Sea, Sussex.  
1948 MALISOUX, Madame YVAN ; Beez, Namur, Belgium.  
1950 MALLÉN, A. ; 34 Willingsworth Road, Ocker Hill, Nr. Wednesbury, Staffs.  
1946 MARSHALL, D. A. ; 21 Wilson Avenue, Troon, Ayrshire.  
1950 MARSHALL, J. C. ; 25 Stevens Road, Sandiacre, Notts.  
1930 MARTIN, A. ; 26 Somerford Road, Reddish, Stockport.  
1951 MASON, H., M.C., F.Z.S. ; 2 Dunstan Road, London, N.W. 11.  
1952 MASON, L. M. ; Talbot Manor, Fincham, King's Lynn, Norfolk.  
1935 MATTHEWS, Mrs. W. M. ; Glandore, New Park Road, Cranleigh, Surrey.  
1953 MAUGHAN, T. ; 77 Calton Avenue, Dulwich, S.E. 21.  
1929 MAXWELL, P. H., F.Z.S., M.B.O.U. ; c/o Zoological Society of London,  
Whipsnade Park, Nr. Dunstable, Beds.  
1913 \*MAXWELL-JACKSON, Miss M., F.Z.S. ; Percy House, Scotton, Knares-  
borough, Yorks.  
1922 \*MAYER, F. W. SHAW, C.M.Z.S. ; c/o Mr. R. W. Tebb, Lae, New Guinea,  
via Australia.  
1948 MEEREN, MICHEL BRAUN DE TER. ; L'Hesidelle, Archennes, par Grez-  
Doiceau, Belgium.  
1935 MERCK, Dr. WOLFGANG ; Marienhöhe 4, Hamburg-Blankenese, Germany.  
1950 MERRY, C. ; 89 King William Street, Tunstall, Stoke-on-Trent.  
1951 MIDDLETON, G. ; 50 Carter Street, Uttoxeter, Staffs.  
1953 MIDDLETON, L. G. ; Stack House, Old Green Lane, Garstang, Lancs.  
1951 MIDWINTER, J. ; 62 Oxford Road, Burford, Oxford.  
1953 MIGHELL, E. R. ; 106 Selborne Road, Southgate, N. 14.  
1951 MILLER, H. E. ; "Westwater," Tedburn St. Mary, Nr. Exeter, Devon.  
1950 MILLER, R. C. ; Standard Bank of South Africa, Ltd., Pietermaritzburg,  
Natal, S. Africa.  
1937 MILLIGAN, H. ; Upper Manor Farm, Leckford, Stockbridge, Hants.  
1951 MILLIGAN, I. B. ; 5 Silsey Avenue, Sale, Cheshire.  
1951 MILNE, R. S. ; 18 Silverwell Street, Bolton, Lancs.  
1929 MILNES-COATES, Sir CLIVE, Bart., F.Z.S. ; 13 Hyde Park Gate, London,  
S.W. 7.  
1937 MILTON, Capt. STANLEY ; 75 Portland Avenue, Gravesend, Kent.  
1948 MITCHELL, A. ; 16 Albany Street, Hull, Yorks.  
1953 MITCHELL, A. ; 3 Borrowdale Grove, Northfield, Birmingham 31.  
1952 MITCHELL, Mrs. F. G. ; Clapton Manor, Kettering, Northants.  
1943 MITCHELL, HAROLD A. ; 2 Stuart Street, East Kilbride, Lanarkshire.  
1952 MITCHELL, R. E. ; 49 Woodlands Avenue, Church End, Finchley, N. 3.  
1950 MITCHELL-FOX, Mrs. E. M. ; Tresawle, Wheatridge Lane, Livermead,  
Torquay, Devon.  
1951 MOFFIT, C. ; 3 Hartley Avenue, Monkseaton, Northumberland.  
1953 MØLLER, A. ; Christen Kolds Alle, Kastrup, Denmark.  
1926 MOODY, A. F. ; Lilford, Oundle, Peterborough.  
1949 MOODY, H. ; 91 Barbara Avenue, Uppingham Road, Leicester.  
1950 MOORE, J. T. ; 17 Gold Street, Wellingborough, Northants.  
1928 MOORE, ROBERT T. ; Sunny Gables, 582 Meadow Grove Place, Flint-  
ridge, Pasadena 3, Calif., U.S.A.



- 1953 MORELLI, Mrs. C. P. ; Route 1, Everson, Washington, U.S.A.  
 1949 MORNY, C. J. ; 52 Draycott Place, London, S.W. 3.  
 1931 MORRISON, A. R. G., F.Z.S., M.B.O.U. ; Sarikei, Sarawak.  
 1947 MOSFORD, FRANK ; The Elms, Churton Heath, Saughton, Nr. Chester.  
 1927 MOTT, B. ; The Croft, Bittell Road, Barnt Green, Worcs.  
 1929 MOTTERSHEAD, G. S., F.Z.S. ; Zoological Gardens, Chester.  
 1923 MOUNTAIN, Capt. WALTON ; Groombridge Place, Groombridge, Kent.  
 1949 MUNDEN, N. J. ; 81 Wilmer Lodge, Epsom Road, Guildford, Surrey.  
 1952 MURRAY, G. T. ; 821 Buchanan Street, Gary, Indiana, U.S.A.  
 1947 MURRAY, H. ; Bracken, Cornsland, Brentwood, Essex.  
 1952 MURRAY, J. B. ; c/o Messrs. Bovril, Ltd., 123 Chaussée de Mons, Brussels, Belgium.  
 1939 MURRAY, RAY J. ; 12 High Road, Camberwell, E. 6, Victoria, Australia.  
 1949 MURRAY, SAMUEL, F.Z.S. ; 18 Somerset Gardens, Lewisham, S.E. 13.  
 1926 \*McCULLAGH, Sir CRAWFORD, Bart. ; Lismara, Whiteabbey, Belfast, N. Ireland.  
 1950 MCGOWAN, H. ; 13 Robertson Way, Ash, Aldershot, Hants.  
 1953 McHALE, J. P. ; 1526 W. Highland Avenue, Chicago 26, Ill., U.S.A.  
 1952 MACINTOSH, D. G. ; Reiffer Park, Sorbie, Newton-Stewart, Wigtownshire.  
 1950 McKENZIE, D. L. ; The New Inn, Winchelsea, Sussex.  
 1952 MACTAVISH, J. A. ; "Forrest Bank," 20 Damdale, Peebles, Scotland.  
 1934 NAETHER, Professor CARL ; 4442 Woodman Avenue, Sherman Oaks, California, U.S.A.  
 1952 NEWELL, J. P., Ph.C., M.P.S.I., D.Opt., M.I.O.S. ; 4 Pearse Street, Athlone, Ireland.  
 1930 NEWILL, D. S., M.D. ; Box 634, Connellsville, Pa., U.S.A.  
 1953 NEWLAND, R. A. ; 93 Arne Avenue, Parkstone, Dorset.  
 1951 NEWMAN, I. N. ; 71 Queens Road, Watford, Herts.  
 1931 NICHOLSON, N. ; Edenvale, 16 Weardale Place, Stockton-on-Tees.  
 1950 NICHOLSON, W. ; 15 Neville Road, Darlington.  
 1947 NICOULLAUD, J. G. ; 48 rue Descartes, Chinon, France.  
 1950 NIXON, JOSEPH ; 5 Bank Street, Carlisle.  
 1947 NOBLE, R. A. W. ; Little Grange, Canterbury Road, Margate, Kent.  
 1948 NOORDZIJ, J. H. ; Burg. Visserpark 13, Alphen a/d Rijn, Holland.  
 1949 NOREEN, GEORGE W. ; Route 3—Box 219, Bothell, Washington, U.S.A.  
 1939 NORRIS, KENNETH A., F.Z.S., M.B.O.U. ; Elmstone, 45 Highfield Road, Purley, Surrey.  
 1951 NOURSE, DUDLEY ; "Content," 4 Earlswood Place, Durban North, Natal, South Africa.  
 1953 OAKES, J. H. ; 93 Robinet Road, Beeston, Nottingham.  
 1950 OLIVER, JOHN W. ; R.I. Box 606, Encinitas, Calif., U.S.A.  
 1950 OLIVIER, GEORGES, F.Z.S., M.B.O.U. ; 6 rue Ch.-Flavigny, Elbeuf (Seine Inférieure), France.  
 1945 OLSON, LEO B. ; 835 South First Street, De Kalb, Illinois, U.S.A.  
 1952 OLSSON, C. J. ; Erik Dahlbergsgatan 19, Gothenborg, Sweden.  
 1928 OSTREHAN, CLEMENT ; Kington Rectory, Worcester.  
 1947 OVEREND, Miss EUNICE ; 49 Alexandra Road, Frome, Somerset.  
 1953 OVERLANDER, D. ; Austrasse 17, Bad Honnef/Rhein, Germany.  
 1953 OZANNE, H. W. H. ; Istambool Lodge, La Ramée, St. Peter Port, Guernsey.  
 1944 PALMELLA, His Excellency the Duke of, F.Z.S. ; 116 Rua Escola Polytechnica, Lisbon, Portugal.



- 1951 PALMER, C. L. ; 102 Paston Lane, Peterborough.
- 1953 PALMER, E. T. ; 4595 Picton Street, Vancouver 16, B.C., Canada.
- 1906 PAM, Major ALBERT, O.B.E., M.A., F.L.S., F.Z.S. ; Wormleybury, Broxbourne, Herts.
- 1950 PANTING, PETER J., B.Sc. ; " Belle Vue," Main Street, Goodwick, Pembs.
- 1950 PARFITT, Sgt. N. D. ; Sgt.'s Mess, 66th Trg. Regt. R.A.C., Catterick Camp, Yorks.
- 1953 PARKER, N. ; Stoneleigh, Scotts Lane, Wilbarston, Nr. Market Harborough.
- 1950 PARREN, RONALD J. ; Lindon House, South Brink, Wisbech, Cambs.
- 1952 PARTRIDGE, P. B. ; 164 Waverley Avenue, Twickenham, Middx.
- 1934 PARTRIDGE, W. R., F.Z.S. ; The Bungalow, Lower Haseler, Nr. Evesham, Worcs.
- 1952 PATON, T. ; " St. Quentins," Stoneyburn, By Bathgate, West Lothian.
- 1952 PATTEN, R. A. ; Box 1, Post Office, Mosman, Sydney, N.S.W., Australia.
- 1949 PAYN, Major W. H., M.B.E., M.B.O.U. ; Hartest Place, Bury St. Edmunds, Suffolk.
- 1950 PAYNE, C. M. ; Sherbourne Priors, Warwick.
- 1951 PEARSON, J. C. ; 63 St. Michael's Road, Aldershot, Hants.
- 1946 PEARSON, RAYMOND ; 179 West Auckland Road, Darlington, Co. Durham.
- 1951 PEASE, Mrs. S. ; R.D. 4, North Harmony Road, Freehold, N.J., U.S.A.
- 1940 PEAT, RODERICK M., F.Z.S. ; 11 Ironmonger Lane, London, E.C. 2.
- 1953 PERRY, J. A. W. ; 14 New Way, Pinelands, Nr. Cape Town, S. Africa.
- 1948 PHILLIPS, Mrs. A. ; 3 Pond Road, Blackheath, S.E. 3.
- 1935 PHIPPS, Mrs. L. N., F.Z.S., M.B.O.U. ; The Manor House, Minster Lovell, Oxon.
- 1903\*\*PICKFORD, RANDOLPH JOHN ; c/o The Manager, Midland Bank Ltd., 629 Attercliffe Road, Sheffield 9.
- 1948 PINFIELD, S. N. ; 95 Pinfold Lane, Penn, Wolverhampton.
- 1934 PITT, W. S. ; Wildwood, Silverdale Avenue, Walton-on-Thames, Surrey.
- 1952 PLANT, J. J. ; 67a Chestergate, Macclesfield, Cheshire.
- 1924 PLATH, KARL ; 305 S. Cuyler Avenue, Oak Park, Illinois, U.S.A.
- 1947 PODMORE, C. R. ; 352 Carter Knowle Road, Ecclesall, Sheffield 11.
- 1949 POHLE, HORST C. ; Fichtestrasse 7, Bayreuth, Germany.
- 1937 POLAK, Dr. A. C. ; Spoorstraat 15, Amersfoort, Holland.
- 1925 POLTIMORE, Lady ; Benwell, P.O. Box 6, Bindura, Southern Rhodesia.
- 1950 PORTER, J. E. ; West Leigh, 17 Newminster Road, Fenham, Newcastle-upon-Tyne 4.
- 1920 PORTER, SYDNEY, F.Z.S., M.B.O.U. ; The White Gates, 149 Stenson Road, Derby.
- 1914 POTTER, BERNARD E., M.B., M.R.C.S., L.R.C.P., F.Z.S. ; 39 Devonshire Place, London, W. 1.
- 1952 PREAN, Mrs. N. ; North Luffenham Hall, North Luffenham, Rutland.
- 1928 PRESTWICH, ARTHUR A. ; 61 Chase Road, Oakwood, N. 14.
- 1946 PRESTWICH, Mrs. J. A. ; Coltishall, Broad Walk, Winchmore Hill, N. 21.
- 1951 PRIEST, Dr. A. A. ; 434-6 Acheson Building, 2131 University Avenue, Berkeley 4, Calif., U.S.A.
- 1952 PRUVOST, E. ; Glenwood Farm, Hempstead, Gillingham, Kent.
- 1943 PUGH, M. C. ; 18 Beech Road, Monmouth, Mon.
- 1953 PUNTER, W. H. ; Rangers Cottage, Hyde Park, W. 2.
- 1953 PYE, Brigadier RANDALL, D.S.O. ; Avenings Farm, Danehill, Sussex.
- 1948 QUENBY, H. F. ; " Standard " House, High Street, Baldock, Herts.
- 1913 QUINCEY, R. S. DE Q., F.Z.S. ; The Vern, Bodenham, Hereford.



- 1953 RAATH, J. F. ; P.O. Box 63, Langlaagte, Transvaal, S. Africa.  
 1948 RABBIN, HILBERT J., I.S.O. ; 33 Kingsway, Wembley.  
 1949 RAGAN, CALVIN ; P.O. Box 7, Bell, California, U.S.A.  
 1953 RANDLE, G. ; 34 Eastfield Avenue, Weston, Bath, Somerset.  
 1943 RANKIN, Lieut.-Col. N., F.R.G.S., F.R.P.S. ; House of Treshnish, Calgary, Isle of Mull, Argyll, Scotland.  
 1950 RATH, JOSEF ; Moosburger Strasse 3, Pfaffenhofen-Jlm (Oberbayern), Germany.  
 1939 RAVEN, WILLIAM H., O.B.E. ; The Mill House, Newbold-on-Stour, Nr. Stratford-on-Avon.  
 1950 RAYMAEKERS, L. ; 71 Avenue Molière, Brussels, Belgium.  
 1947 REAY, J. H. ; Cranmore, The Close, Hillingdon, Middx.  
 1950 REED, Mrs. E. CAROLINE WARMINGTON ; Weald's Gate, Wadhurst, Sussex.  
 1953 REED, Mrs. H. F. ; 2312 So. Buckner Blvd., Dallas, Texas, U.S.A.  
 1950 REES, D. W. ; 79 King's Road, Canton, Cardiff, S. Wales.  
 1950 REES, FRED ; Leckford, Stockbridge, Hants.  
 1939 REID, Miss MARION C. ; c/o Messrs. John Reid, Ltd., Walt Street, Newcastle, N.S.W., Australia.  
 1951 REID-HENRY, D. M. ; 43 West View Drive, Woodford Green, Essex.  
 1951 RENDELL, R. G. ; 60 Guinions Road, High Wycombe, Bucks.  
 1952 RETIEF, J. E. ; 56 Lincoln Street, Bellville, Cape Province, South Africa.  
 1928 REVENTLOW, AXEL, C.M.Z.S. ; Zoologisk Have, København F., Denmark.  
 1953 REYNAL, E. ; 221 East 49th Street, New York, N.Y., U.S.A.  
 1946 RICARDO, Mrs. MARY C. ; Audreys, Burghfield Common, Reading, Berks.  
 1950 RICH, JOSEPH W. ; 1073 West 11th Street, San Pedro, Calif., U.S.A.  
 1953 RICHARDS, E. ; 5 West Lane, Pengelly, Delabole, N. Cornwall.  
 1949 RICHARDSON, JAMES ; 101 Stockton Lane, York.  
 1953 RIDLEY, C. T. ; Birdwarren Farm, Varsity View P.O., Charleswood, Manitoba, Canada.  
 1948 RIIS-HANSEN, KAI ; Nørre Alle 75, Glostrup, Denmark.  
 1937 RIPLEY, S. DILLON, Ph.D., M.B.O.U. ; Kilravock, Litchfield, Conn., U.S.A.  
 1935 RISDON, D. H. S. ; The Dudley Zoological Society, Dudley, Worcs.  
 1943 ROBERTSON, Dr. A. R. ; P.O. Box 95, Kroonstad, O.F.S., South Africa.  
 1951 ROBERTSON, J. M. ; Rosearden, 10 Petrie Crescent, Elgin, Morayshire.  
 1947 ROBINSON, B. E. ; Field House, Blackborough Road, Reigate, Surrey.  
 1951 ROBINSON, G. E. ; 487 Little Horton Lane, Bradford.  
 1953 ROBINSON, H. A. ; 903 Arcadia Avenue, Arcadia, Calif., U.S.A.  
 1927 ROBISON, A. W. ; 125 Maiden Lane, San Francisco 8, Calif., U.S.A.  
 1953 RODEN, Miss L. B. ; Buckles, Burwash Common, Sussex.  
 1952 RODGERS, J. ; Balland House Cottage, Ashburton, Devon.  
 1951 ROLPH, W. ; Undley Lodge, Lakenheath, Suffolk.  
 1945 ROONEY, JAMES P., M.B.O.U. ; 1514 South 12th Avenue, Yakima, Washington, U.S.A.  
 1946 ROOTE, CYRIL C. ; 116 Cardinal's Walk, Scraptoft Lane, Leicester.  
 1953 ROTERS, J. ; Elk Lumber Co., Box 170, Temiskaming, Quebec, Canada.  
 1952 ROUÉ, H. ; L'Astrée, Boulevard du Théâtre, Chambéry, Savoie, France.  
 1951 ROYDEN, T. W. E. ; Broad House, Fleggburgh, Norfolk.  
 1952 RUDKIN, F. H., Jr. ; 3rd and Fillmore Streets, Fillmore, California, U.S.A.  
 1950 RUSSELL, BARNABAS, F.R.S.A., F.Z.S., F.R.H.S. ; 20 Bucklersbury, Hitchin, Herts.  
 1952 RYAN, C. J. ; 515 Madison Avenue, New York 22, N.Y., U.S.A.  
 1927 RYCROFT, Mrs. VIOLET ; Grey Gables, Cirencester, Glos.



- 1951 SALTERI, D., F.Z.S. ; 44 Montrose Terrace, Edinburgh 7.  
 1953 SANDS, W. M. ; 12 Rothbury Gardens, Adel, Leeds 6.  
 1945 SAUNDERS, RONALD, F.Z.S. ; Regent Parade, Sycamore Road, Amersham, Bucks.  
 1950 SAWDEN, M. ; Farm House, H.M.B.I., Feltham, Middx.  
 1949 SAWYER, R. C. J., F.Z.S. ; 226 Haggerston Road, London, E. 8.  
 1953 SCAMELL, Mrs. K. M. ; 1 Marine Crescent, North Drive, Great Yarmouth.  
 1949 SCHNEIDER, P. E. ; 5113 No. Acacia Street, San Gabriel, Calif., U.S.A.  
 1951 SCHUMACHER, Mrs. H. L. ; 7027 Sycamore Avenue, Seattle 7, Washington, U.S.A.  
 1914 SCHUYL, D. G. ; Kralingscheweg 332, Rotterdam O, Holland.  
 1934 SCOTT, A. H., F.Z.S. ; Abbotswell, Frogham, Fordingbridge, Hants.  
 1938 \*SCOTT, PETER, C.B.E., D.S.C., M.A., F.Z.S., M.B.O.U. ; The New Grounds, Slimbridge, Gloucestershire.  
 1952 SCOTT, R. A. ; 1 Lambton Road, Broadmeadow, N.S.W., Australia.  
 1928 SCOTT-HOPKINS, Capt. C., F.Z.S. ; Knoll House, Shiplake, Oxon.  
 1951 SCROGGIN, J. B. ; Helotes, Texas, U.S.A.  
 1951 SEAGO, J., F.Z.S. ; Hall Common, Ludham, Norfolk.  
 1951 SEARS, JOHN L. ; Reel Hall, Shamley Green, Guildford, Surrey.  
 1951 SEATON, Major C. P. H. ; 62 Picardy Road, Belvedere, Kent.  
 1952 SENNETT, R. S. ; 354 Concord Avenue, Toronto 4, Canada.  
 1953 SEWELL, W. A. ; Pleasley Road, Skegby, Nr. Mansfield.  
 1951 SHAFFER, B. ; 3006 South West Temple, Salt Lake City, Utah, U.S.A.  
 1952 SHARP, H. F. ; (Address unknown.)  
 1932 SHEARING, A. P. ; The Aviaries, Foxwarren Park, Cobham, Surrey.  
 1951 SHELLIM, Dr. M. A. ; 7 Middleton Mansions, Calcutta 16, India.  
 1952 SHELTON, W. E. ; "Elgar," St. John's Road, Newbold, Chesterfield.  
 1953 SHOLAR, Dr. N. P., D.D.S. ; Box 265, Mooresville, N.C., U.S.A.  
 1953 SHONAMAN, W. ; 1890-21 Avenue, New Westminster, B.C., Canada.  
 1950 SHORNEY, E. G. ; 15 Sandall Close, Ealing, W. 5.  
 1949 SHORTMAN, H. K. W., F.Z.S. ; 45 Commercial Street, Newport, Mon.  
 1946 SIBLEY, A. E., F.Z.S. ; 15 Windsor Crescent, Harrow, Middx.  
 1934 SIBLEY, C. L. ; Sevenfires, 111 Main Street, Nantucket, Mass., U.S.A.  
 1953 SIMÕES, J. F. ; 5 Largo Conde, Barão, Lisboa, Portugal.  
 1924 SIMPSON, H. W. ; 6 Barry Road, Stonebridge, Willesden, N.W. 10.  
 1937 SIMPSON, Mrs. M. K. M. ; The Hollies, Limekilns, Dunfermline, Fife.  
 1947 SLADER, W. T., J.P. ; Pentillie, Honiton Road, Exeter.  
 1954 SMART, T. E. ; Castlemead, Tenbury Wells, Worcs.  
 1952 SMITH, A. J. ; 11 High Street, Nairn, Scotland.  
 1941 SMITH, E. WILFORD ; "Lynwood," 15 Kingsway Road, Leicester.  
 1947 SMITH, KENNETH J. ; Paignton Zoological Gardens, Paignton, Devon.  
 1952 SMITH, S. ; c/o Henry Sotheren, Ltd., 2-5 Sackville Street, Piccadilly, London, W. 1.  
 1952 SMITH, S. H. ; 10 South Bay Road, Repulse Bay, Hong Kong.  
 1952 SMITH T. ; 46 Millburn Street, Crook, Co. Durham.  
 1917 SMITH, W. PROCTER, F.Z.S. ; Bexton House, Knutsford, Cheshire.  
 1953 SNAZLE, H. A., M.B.E. ; Chessington Zoo, Ltd., Leatherhead Road, Chessington, Surrey.  
 1946 SOANES, ARTHUR C. ; The Fishery Inn, Elstree, Herts.  
 1950 SOAR, E. R. ; 50 Harvey Road, West End Road, Greenford, Middx.  
 1951 SOUTH, E. A. ; P.O. Box 487, Colusa, Calif., U.S.A.  
 1949 SPACKMAN, G. DONALD, Jr. ; Hill Farm, Coatesville, Penna., U.S.A.



- 1952 SPEED, Mrs. D. A. ; 925 Clinton Avenue, Fresno, California, U.S.A.  
 1951 SPEEL, C. ; Saxenburgerweg 9, Bloemendaal, Holland.  
 1954 SPENCE, J. M. ; "Jenh," Woodley Road, Plumstead, Cape Town, S. Africa.  
 1952 SPENCE, T., M.R.C.V.S. ; Dunbog, Newburgh, Fife, Scotland.  
 1953 SPILSBURY, D. T. ; 12 Hill View, Upper Howsell Road, Malvern Link, Worcs.  
 1923 SPRAWSON, Professor Evelyn, M.C., D.Sc., M.R.C.S., F.Z.S. ; Cranford, Welcomes Road, Kenley, Surrey.  
 1923 SPURWAY, N. B. ; "The Hermitage," Oadby, Leicestershire.  
 1939 SQUIRE, E. O. ; Basmead Manor, St. Neots, Hunts.  
 1939 STEINBECK, J. W. ; P.O. Box 832, Concord, California, U.S.A.  
 1952 STEPHENSON, E. ; 11 Sebastopol Terrace, Bowden Close, Nr Crook, Co. Durham.  
 1953 STEVENS, A. ; 56 Gwencole Crescent, Braunstone, Leicester.  
 1953 STEVENS, K. ; 45 Britwell Road, Wylde Green, Birmingham.  
 1932 STEVENS, RONALD ; Walcot Hall, Lydbury North, Shropshire.  
 1953 STEWART, T. ; 33 Jeffrey Avenue, Parkfields, Wolverhampton, Staffs.  
 1953 STIVEN, H. ; 26 Park View, Lochgelly, Fife, Scotland.  
 1952 STODDART, R. W. ; 26 Owston Road, Carcroft, Doncaster, Yorks.  
 1922 STOKES, Capt. H. S., M.C., F.Z.S. ; Longdon, Rugeley, Staffordshire.  
 1953 STONE, M. B., Jr. ; Martin's Pond Road, Groton, Mass., U.S.A.  
 1952 STONE, R. ; 612 Romford Road, Manor Park, E. 12.  
 1928 STORMONTH-DARLING, P. ; 7 Egerton Court, Harrington Road, London, S.W. 7.  
 1951 STRAIGHT, WHITNEY, C.B.E., M.C., D.F.C. ; The Aviary, Windmill Lane, Southall, Middx.  
 1948 STRANGE, FRANK E. ; P.O. Box 207, Redondo Beach, California, U.S.A.  
 1953 STREMIG, G. W. ; 150 Berkley Road, Glenside, Pa., U.S.A.  
 1948 STRETCH, H. ; 119 Wilton Road, Salisbury.  
 1950 STROMBERG, D. ; "The Aviary," 57 Elgin Road, Seven Kings, Essex.  
 1930 STROMBI, Miss DORA A. ; Eastbank House, Brechin, Angus.  
 1949 STRUTT, Hon. PETER A. ; Bentley Park, Ipswich, Suffolk.  
 1950 STURGIS, A. F. ; 740 Sansom Street, Philadelphia 6, Pa., U.S.A.  
 1952 SUNDSTRÖM, Miss BRITT-MARIE ; Östra Larmgatan 3, Gothenburg, Sweden.  
 1952 SUTTON, J. W. C. ; The Patch, Salthouse, Holt, Norfolk.  
 1938 SUTTON, PETER, M.R.C.V.S. ; 11 Culverden Park Road, Tunbridge Wells.  
 1951 SVANE, C. H. ; Frederikssundsvej 168, Brønshøj, Copenhagen, Denmark.  
 1950 SVOBODA, Dr. BEN J. ; 1400 E. Olive Street, Compton I, Calif., U.S.A.  
 1902\*\*SWAN, J. A., F.Z.S. ; Hazel Mere, Rectory Lane, Sidcup, Kent.  
 1950 SWAN, Mrs. J. A. ; Hazel Mere, Rectory Lane, Sidcup, Kent.  
 1951 SWANEPOEL, P. ; Central Service Station, Warden Street, Harrismith, O.F.S., S. Africa.  
 1948 SYKES, JOSEPH ; 167 North High Street, Musselburgh, Scotland.  
 1950 TAGER, I. ; P.O. Box 40, Parys, O.F.S., S. Africa.  
 1953 TAMBLYN, S. A. ; "Penlaurel," South Petherwyn, Launceston, Cornwall.  
 1946 TANCRED, P. H. ; 19 Hardy Street, Ashfield, Sydney, N.S.W., Australia.  
 1946 TAYLOR, JAMES, M.B.O.U. ; Lower Hilcot, Withington, Cheltenham, Glos.  
 1952 TAYLOR, R. A., F.Z.S. ; 182 Lambeth Walk, London, S.E. 11.  
 1945 TAYLOR, T. G., M.A. ; 16 Derby Road, Caversham, Reading.  
 1930 TEAGUE, P. W. ; Rowlestone, Teignmouth Road, Dawlish, Devon.



- 1954 TEMBLETT, H. ; c/o Springfield Colliery, P.O. Redan, S. Africa.  
 1926 TENNANT, Hon. STEPHEN ; Wilsford Manor, Salisbury.  
 1950 TENNEY, Mrs. EDNA ; Star Route, San Marcos Pass, Santa Barbara, Calif., U.S.A.  
 1946 TERRY, Miss MARGUERITE ; Lumeah, Boulivot, Grouville, Jersey, Channel Islands.  
 1952 THEAKER, J. N. ; The Grove, Swadlincote, Nr. Burton-on-Trent.  
 1952 THEUNISSEN, S. ; 19 McGhee Street, Sale, Victoria, Australia.  
 1949 THOMAS, A. E. ; Burnt House, Chigwell, Essex.  
 1931 THOMAS, F. E. ; Barnfield, Dunsfold, Surrey.  
 1949 THOMAS, RAY ; 1601 South Hope Street, Los Angeles 15, Calif., U.S.A.  
 1950 THOMPSON, LLOYD B. ; 2010 Cliff Avenue, North Burnaby, Vancouver, B.C., Canada.  
 1946 \*TINSLEY, PATRICK C. ; Hurn Hall, Holbeach, Spalding, Lincs.  
 1946 \*TINSLEY, WILLIAM G. ; The Poplars, Holbeach, St. Marks, Lincs.  
 1952 TOLLEMACHE, Major J. E. H., M.C. ; Helmingham Hall, Stowmarket, Suffolk.  
 1950 TONG, E. H. ; Zoological Society of London, Whipsnade Park, Nr. Dunstable, Beds.  
 1951 TREVISICK, C. H., F.Z.S. ; Ilfracombe Zoo Park, Comyn Hill, North Devon.  
 1951 TRISE, H. R. ; 89 Dover Road, Copnor, Portsmouth.  
 1952 TROUBRIDGE, Lady ; Middle Oakshott, Hawkley, Liss, Hants.  
 1947 TUCKWELL, DAVID ; Asliesk, Alves by Forres, Morayshire.  
 1933 TUMA, F. L. ; Limhamnsvagen 12A, Malmö, Sweden.  
 1939 TUNESI, A. W. ; Elmside, 93 Vicarage Road, Sunbury-on-Thames, Middx.  
 1928 TURNER, H. B. ; Malverleys, Nr. Newbury, Berks.  
 1930 \*TURNER, WALTER H. ; 15 Sutherland Road, Chatswood, N.S.W., Australia.  
 1934 TYEBJEE, ABDE AMIRUDIN SHALEBHOY ; Malabar Court, Ridge Road, Malabar Hill, Bombay 6, India.
- 1946 UNDERWOOD, A. J. ; 24 Wellington Street, Kettering, Northants.  
 1952 UPSON, J. W. ; 1 Golden Lion Lane, Harwich, Essex.
- 1954 VADEN, J. M. ; 2533 S. 3rd Street, Abilene, Texas, U.S.A.  
 1951 VAN APeldoorn, A. G. ; "Het Soerel," Heerde, Holland.  
 1949 VAN DEN BERGH, WALTER, C.M.Z.S. ; Société Royale de Zoologie d'Anvers, 26 Place Reine Astrid, Antwerp, Belgium.  
 1953 VAN DEN BRINK, G., Jr. ; "Avifauna" Park, Alphen a.d. Rijn, Holland.  
 1953 VAN DER MARK, R. R. P. ; Koningin Wilhelminalaan 2, Amersfoort, Holland.  
 1953 VAN DER MERWE, Dr. J. J. A. ; P.O. Box 36, Bellville, C.P., S. Africa.  
 1950 VAN DIJK, H. C. ; Fabriekstraat 6, Tilburg, Holland.  
 1948 VAN DIJK, H. J. ; Animali, Eindhoven, Holland.  
 1950 VAN DIJK, N. ; Bisschop Aelenstraat 50, Tilburg, Holland.  
 1937 VANE, E. N. T., F.Z.S., M.B.O.U. ; Fairacre, Chiltern Road, Ballinger, Gt. Missenden, Bucks.  
 1934 VAN HEYST, A. F. C. A. ; Koningin Wilhelminalaan 30, Amersfoort, Holland.  
 1950 VAN LEEUWEN, J. DOCTERS ; Hoveniersweg 37, Tiel, Holland.  
 1953 VAN OOSTEN, J. R. ; 2065 Oak Knoll Ave., San Marino 9, Calif, U.S.A.  
 1951 VAN Vollenhoven, P. ; Burgem Knappertlaan 128, Schiedam, Holland.



- 1951 VAN WACHEM, R. H. ; Joh. Geradtsweg 44, Hilversum, Holland.  
 1947 VEITCH, Capt. R. W., M.B.E., B.Sc. ; Redridge, Garforth, Nr. Leeds.  
 1928 VIERHELLER, GEORGE P. ; St. Louis Zoological Park, St. Louis 10, Mo., U.S.A.  
 1947 VINSON, MARK ; The Beeches Farm, Cowden, Edenbridge, Kent.  
 1936 VOY, Miss HILDA ; Lynchets, Longbridge Deverill, Warminster, Wilts.  
 1948 VUCOVICH, PAYSON ; Rte. 5, Box 846, Hanford, California, U.S.A.
- 1948 WADDAMS, W. LAWSON ; 34 Thurlston Avenue, Sheldon, Birmingham 26.  
 1947 WAIT, F. R., F.Z.S. ; Bridge House, Hemsby, Nr. Great Yarmouth, Norfolk.  
 1952 WAITE, J. ; 6 Attwood Street, Kidsgrove, Staffs.  
 1948 WAKEFIELD, Mrs. C. H. ; 139 Senic Drive, Palomar Park, Redwood City, California, U.S.A.  
 1953 WALKER, N. S. ; Farthing Green, Farthing Green Lane, Stoke Poges, Bucks.  
 1953 WALKER, P. T. ; Dan-y-Bont, Gilwern, Nr. Abergavenny, Mon.  
 1936 WALLER, H., F.Z.S. ; Oldway, Pilgrims Way, Westhumble, Dorking, Surrey.  
 1951 WALLIN, Mrs. O. H. ; 11543-36 N.E., Seattle 55, Washington, U.S.A.  
 1951 WALMSLEY, J. H. ; 50 Athlone Street, Mount Pleasant, Port Elizabeth, C.P., S. Africa.  
 1952 WARD, Mrs. M. K. ; Dilhorne House, Dilhorne, Stoke-on-Trent.  
 1952 WARING, S. D. ; 13 Oakhill Road, Maghull, Nr Liverpool, Lancs.  
 1935 WARRE, Mrs. PHILIP ; Coppid Hall, Stifford, Essex.  
 1952 WASTELL, C. H. ; "Mon Abri," Stapleford Abbots, Essex.  
 1932 WATKINS, T. R. HOLMES ; Oronsay, The Ellipse, Griffithstown, Mon.  
 1953 WATSON, A. ; 24 River Street, Brechin, Angus, Scotland.  
 1950 WATSON, J. K. ; Doonholm, P.O. Box 757, Nairobi, Kenya Colony.  
 1950 WATTS, R. A. ; 49 Midland Road, Wellingborough, Northants.  
 1913 WAUD, Capt. L. REGINALD, F.Z.S., M.B.O.U. ; Bradley Court, Chieveley, Nr. Newbury, Berks.  
 1933 WEAVER, GEORGE, F.Z.S. ; 77 Offmore Road, Kidderminster, Worcs.  
 1929 WEBB, P. B. ; Barney's Brae, Randalstown, Co. Antrim.  
 1935 WEBBER, LEONARD C. ; 6 Grand View Parade, Epping, N.S.W., Australia.  
 1937 \*WEBER, ORLANDO F., Jr. ; 22 East 82nd Street, New York, U.S.A.  
 1950 WEINMAN, Major A. N., M.B.E., C.M.Z.S. ; The Zoological Gardens of Ceylon, Allan Avenue, Dehiwela, Colombo, Ceylon.  
 1942 WENKE, FRANCIS L. ; 115 N. 20th Street, Olean, N.Y., U.S.A.  
 1947 WEST, DAVID ; 209 N. 18th Street, Montebello, California, U.S.A.  
 1932 WHARTON-TIGAR, Mrs. N., F.Z.S. ; The Highlands, Manston, Nr. Ramsgate.  
 1951 WHATLEY, E. C. ; Wonston Manor Cottages, Sutton Scotney, Nr. Winchester, Hants.  
 1950 WHEATLEY, Mrs. GRACE, R.W.S., F.Z.S. ; Heathfield House, Windmill Road, Wimbledon Parkside, S.W. 19.  
 1947 WHEELER, T. E. ; Lynwood, Onslow Avenue, Cheam, Surrey.  
 1947 WHEELER, Mrs. T. E., F.Z.S. ; Lynwood, Onslow Avenue, Cheam, Surrey.  
 1953 WHISTON, W. ; "Lothersdale," Far Heath, Winterley, Sandbach, Cheshire.  
 1953 WHITE, R. I. ; 786 Geary Street, Apt. 401, San Francisco, Calif., U.S.A.  
 1953 WHITEHOUSE, N. V. ; 185 George Street, Brisbane, Australia.  
 1953 WHITFORD, T. B., F.Z.S. ; Bridge Road, Chessington, Surrey.  
 1923 \*WHITLEY, HERBERT, F.Z.S., F.R.H.S., M.B.O.U. ; Primley Hill, Paignton, S. Devon.



- 1950 WHITMARSH, W. N. ; 28b John Street (rear), Porthcawl, Glam.  
 1935 WHITMORE, G. E. ; 168 High Street, West Bromwich, Birmingham.  
 1953 WICKS, Mrs. E. ; Silver Springs, Beaufort Road, St. Leonards-on-Sea, Sussex.  
 1952 WHITSON, K. V. ; 9 Haig Avenue, Queenstown, South Africa.  
 1924 WILDEBOER, Dr. H. ; "Burnbrae," Holderness Road, Hull, Yorks.  
 1930 WILKINS, A. ; Rendcombe, Chesham, Bucks.  
 1947 WILKINS, Miss DORA ; The Manor House, Brize-Norton, Oxford.  
 1950 WILKINS, E. E. ; 60 Brentford Road, Kings Heath, Birmingham 14.  
 1949 WILLEMS, Prof. Dr. A. E. R. ; Montereystaat 24, Ghent, Belgium.  
 1907 WILLFORD, HENRY ; Sans Souci, Havenstreet, Ryde, Isle of Wight.  
 1948 WILLIAMS, H. P. ; 2 Burcote Road, Pye Hayes, Birmingham 24.  
 1905 WILLIAMS, SIDNEY, F.Z.S. ; Sea Crest, Nyewood Lane South, Bognor Regis, Sussex.  
 1950 WILLIAMS, T. J. ; Cartref, Sylva Gardens North, Craig-y-Don, Llandudno, N. Wales.  
 1945 WILLIAMSON, T. F. M. ; Benvenuto Avenue, Brentwood Bay, B.C., Canada.  
 1951 WILLIS-FLEMING, Major D., F.Z.S. ; "Helvetie," Plymouth Road, Totnes, Devon.  
 1951 WILLMOTT, J. D. ; Box 488, Mount Dora, Florida, U.S.A.  
 1948 WILLSHER, Mrs. G. A. ; 37 Springfield Road, Thornton Heath, Surrey.  
 1950 WILMOT, H., F.Z.S., M.R.I. ; c/o Midland Bank, Ltd., 340 West End Lane, London, N.W. 6.  
 1939 WILSON, ALEX M. ; Middlemoor, Presteigne, Radnorshire.  
 1927 WILSON, ANDREW, F.Z.S. ; 233 Argyle Street, Glasgow, C. 2.  
 1948 \*WILSON, CALVIN D., M.A. ; Tracy Aviary, Liberty Park, 589 East 13th South, Salt Lake City 4, Utah, U.S.A.  
 1950 WILSON, G. ; Gladstone House, High Street, St. Neots, Hunts.  
 1952 WILSON, T. ; 216 Blockhouse Bay Road, Avondale, S.W. 3, Auckland, New Zealand.  
 1950 WINCH, R. F. ; Queen Charlotte Fisheries, Ltd., 610 Bidwell Street, Vancouver, B.C., Canada.  
 1953 WINDECKER, Dr. W. ; Zoologischer Garten, Riehler Strasse 173, Köln-Riehl, Germany.  
 1922 WINTER, DWIGHT ; 1160 Beechwood Blvd., Pittsburgh 6, Pa., U.S.A.  
 1937 WITTING, R. C., F.R.G.S., F.Z.S., M.B.O.U. ; The Gables, West Horsley, Surrey.  
 1951 WITTING, Mrs. R. C. ; The Gables, West Horsley, Surrey.  
 1953 WOOD, G. ; 4 Ham Green Cottages, Wittersham, Nr. Tenterden, Kent.  
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 1945 WOOD, H. WALLACE ; Oak Hall, Hythe, Kent.  
 1940 WOOD, J. A. ; 68½ Pitt Street, Sydney, N.S.W., Australia.  
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 1952 WORTHEN, G. ; 7500 West 2700 So. Street, Magna, Utah, U.S.A.  
 1945 WRAGG, H. B. ; 131 Berridge Road East, Sherwood Rise, Nottingham.  
 1950 WRIGHT, S. A., F.Z.S. ; 59 Ashridge Gardens, Palmers Green, N. 13.  
 1952 WYLLIE, R., Jr. ; 20 Marchlands Avenue, Bo'ness, West Lothian.  
 1947 YAEGER, LEWIS ; P.O. Box 761, Tempe, Arizona, U.S.A.  
 1952 YARNELL, J. ; Barnack, Nr. Stamford, Lincs.  
 1934 YEALLAND, JOHN, F.Z.S. ; The Zoological Society of London, Regent's Park, N.W. 1.



- 1932 YOUNGER, Mrs. L. ; 244 Cranmer Court, Sloane Avenue, S.W. 3.  
 1953 YOUNGHUSBAND, R. ; Ghyll Mount, Ellenborough, Maryport, Cumberland.  
 1953 ZABALDANO, J. B. ; 15702 E. Nelson Avenue, Puente, Calif., U.S.A.  
 1951 ZEORLIN, R. V. ; 308 East Thomas, Seattle 2, Washington, U.S.A.

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THE AVICULTURAL SOCIETY OF NEW ZEALAND

LIST OF AFFILIATED MEMBERS

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MCNEILL, C. ; P.O. Box 267, New Plymouth, Taranaki, N.Z.  
MORAN, H. D. ; 78a Division Street, Riccarton, Christchurch, N.Z.  
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TAYLOR, F. G. ; Kairaki Beach, Canterbury, N.Z.  
TYRRELL, R. J. ; 270 Kaikorai Valley, Dunedin, W. 2, N.Z.

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## THE AVICULTURAL SOCIETY OF SOUTH AUSTRALIA (ADELAIDE)

## LIST OF AFFILIATED MEMBERS

CLYMA, M. ; 28 Avenue Road, Frewville, South Australia.  
DUNSTONE, Dr. L. J. ; 30 Malvern Avenue, Malvern, South Australia.  
FECHNER, C. ; 29 Woodville Road, Woodville, South Australia.  
HAMILTON, Dr. Wm. ; 188 North Terrace, Adelaide, South Australia.  
HUTCHINSON, W. J. ; Coulis Road, Athelstone, South Australia.  
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MANFIELD, H. ; c/o Zoological Gardens, Adelaide, South Australia.  
MCKECHNIE, R. ; 6 Eric Street, Plympton, South Australia.  
SEPPELT, OSCAR ; 57 Northumberland Street, Tusmore, Adelaide, South Australia.  
SEWELL, H. S. ; 12 Stannington Avenue, Toorak East, Adelaide, South Australia.  
WRIGHT, R. ; Langdon Avenue, Clarence Park, South Australia.



## Rules of the Avicultural Society

*Last amended, 11th November, 1953.*

1.—The name of the Society shall be THE AVICULTURAL SOCIETY, and its object shall be the study of British and Foreign Birds in freedom and in captivity. Poultry, Pigeons, and Canaries shall be outside the scope of the Society. The year of the Society, with that of each volume of the Society's Magazine, which shall be known as the AVICULTURAL MAGAZINE, shall commence with the month of January and end on the 31st December following.

2.—The Avicultural Society shall consist of Ordinary, Life, Honorary Life Members, and Honorary Fellows, and the last shall be restricted in number to ten, and be elected by the Council.

3.—The Officers of the Society shall be elected, annually if necessary, by Members of the Council in the manner hereinafter provided, and shall consist of a President, one or more Vice-Presidents, a Secretary-Treasurer, an Assistant Secretary, an Editor, and a Council of fifteen Members. The President, Vice-Presidents, Secretary-Treasurer, Assistant Secretary, and Editor shall be *ex officio* Members of the Council.

4.—New Members shall be proposed in writing, and the name and address of every person thus proposed, with the name of the Member proposing him shall be published in the next issue of the Magazine. Unless the candidate shall within two weeks after the publication of his name in the Magazine, be objected to by at least two Members, he shall be deemed to be duly elected. If five Members shall lodge with the Secretary objections to any candidate he shall not be elected, but the signatures to the signed objections must be verified by the Scrutineer. If two or more Members shall object to any candidate the name of such candidate shall be brought before the Council at their next meeting, and the Council shall have power to elect or to disqualify him from election.

5.—Each Member shall pay an annual subscription of £1, to be due and payable in advance on the 1st of January in each year; and, on payment of the subscription shall be entitled to receive all the numbers of the Society's Magazine for the current year. Life Member's fee, £15.

6.—Members intending to resign their membership at the end of the current year of the Society are expected to give notice to the Secretary before the 1st of December, so that their names may not be included in the "List of Members", which shall be published annually in the January number of the Magazine.



7.—The Magazine of the Society shall be issued on or about the first day of every month, and forwarded, post free, *to all the Members who shall have paid their subscriptions for the year ; but no Magazine shall be sent or delivered to any Member until the annual subscription shall have reached the hands of the Secretary-Treasurer.* Members whose subscriptions shall not have been paid as above by the first day in November in any year shall cease to be Members of the Society, but may be readmitted, at the discretion of the Council, on payment of the annual subscription.

8.—The Secretary-Treasurer, Assistant Secretary, and Editor shall be elected for a term of five years, and, should a vacancy occur, it may be temporarily filled by the Executive Committee (see Rule 10). At the expiration of the term of five years in every case it shall be competent for the Council to nominate the same officer, or another Member, for a further term of five years, unless a second candidate be proposed by not less than twenty-five Members of at least two years' standing, as set forth below.

In the November number of the Magazine preceding the retirement from office of the Secretary-Treasurer, Assistant Secretary, and Editor, the Council shall publish the names of those members whom they have nominated to fill the vacancies thus created ; and these Members shall be deemed duly elected unless another candidate or candidates be proposed by not less than fifteen Members of at least two years' standing. Such proposal, duly seconded and containing the written consent of the nominee to serve, if elected, in the capacity for which he is proposed, must reach the Secretary on or before the 15th of November.

9.—The Members of the Council shall retire by rotation, three at the end of each year of the Society (unless a vacancy or vacancies shall occur otherwise) and three other Members of the Society shall be recommended by the Council to take the place of those retiring. The names of the three Members recommended shall be printed in the November number of the AVICULTURAL MAGAZINE. Should the Council's selection be objected to by fifteen or more Members, these shall have power to put forward three other candidates, whose names, together with the signatures of not less than fifteen Members proposing them, must reach the Secretary *by the 15th of November.* The names of the six candidates will then be printed on a voting paper and sent to each Member with the December number of the Magazine, and the result of the voting published in the January issue. Should no alternative candidates be put forward, in the manner and by the date above specified, the three candidates recommended by the Council shall be deemed to have been duly elected. In the event of an equality of votes the President shall have a casting vote.

If any Member of the Council does not attend a meeting for two years in succession the Council shall have power to elect another Member in his place.

10.—Immediately after the election of the Council that body shall proceed to elect three from its Members. These three, together with the Secretary-Treasurer, Assistant Secretary, and Editor, shall form a Committee known as the Executive Committee.

The duties of the Executive Committee shall be as follows :—

(i) In the event of the resignation of any of the Officers during the Society's year, to fill temporarily the vacancy until the end of the year. In the case of the office being one which is held for more than one year (e.g. Secretary-Treasurer, Assistant Secretary, or Editor) the appointment shall be confirmed by the Council at its next meeting.



(ii) To act for the Council in the decision of any other matter that may arise in connection with the business of the Society.

The decision of any matter by the Executive to be settled by a simple majority (three to form a quorum). In the event of a tie on any question, such question shall be forthwith submitted by letter to the Council for their decision.

The Executive shall not have power

- (i) To add to or alter the Rules ;
- (ii) To expel any Member ;
- (iii) To re-elect the Secretary-Treasurer, Assistant Secretary, or Editor for a second term of office.

It shall not be lawful for the Treasurer to pay any account exceeding £10 unless such account be duly sanctioned by another Member of the Executive.

It shall be lawful for the Secretary-Treasurer or Editor to pledge the Society's credit for a sum not exceeding £100.

Should a Member wish any matter to be brought before the Council direct such matter should be sent to the Secretary with a letter stating that it is to be brought before the Council at their next meeting, otherwise communications will in the first place be brought before the Executive.

A decision of a majority of the Council, or a majority of the Executive endorsed by the Council, shall be final and conclusive in all matters.

11.—The Editor shall have an absolute discretion as to what matter shall be published in the Magazine (subject to the control of the Executive Committee). The Secretary and Editor shall respectively refer all matters of doubt and difficulty to the Executive Committee.

12.—The Council (but not a committee of the Council) shall have power to alter and add to the Rules, from time to time, in any manner they may think fit. Five to form a quorum at any meeting of the Council.

13.—The Council shall have power to expel any Member from the Society at any time without assigning any reason.



## The Society's Medal

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### RULES

The Medal may be awarded at the discretion of the Council to any Member who shall succeed in breeding, in the United Kingdom, any species of bird which shall not be known to have been previously bred in captivity in Great Britain or Northern Ireland. Any Member wishing to obtain the Medal must send a detailed account for publication in the Magazine within about eight weeks from the date of hatching of the young, and furnish such evidence of the facts as the Council may require. The Medal will be awarded only in cases where the young shall live to be old enough to feed themselves, and to be wholly independent of their parents. The question of awarding a Medal for the breeding of local races or sub-species of species that have already been bred shall be at the discretion of the Council. No Medal can be given for the breeding of hybrids.

The account of the breeding must be reasonably full so as to afford instruction to our Members, and must appear in the AVICULTURAL MAGAZINE before it is published or notified elsewhere. It should describe the plumage of the young, and *be of value as a permanent record of the nesting and general habits of the species*. These points will have great weight when the question of awarding the Medal is under consideration.

In every case the decision of the Council shall be final.

The Medal will be forwarded to each Member as soon after it shall have been awarded as possible.

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The Medal is struck in bronze (but the Council reserve the right to issue it in *silver* in very special cases) and measures  $2\frac{1}{2}$  inches in diameter. It bears on the obverse a representation of two birds with a nest containing eggs, and the words "The Avicultural Society—founded 1894". On the reverse is the following inscription: "Awarded to [*name of recipient*] for rearing the young of [*name of species*], a species not previously bred in captivity in the United Kingdom."

The Council may grant a special medal to any member who shall succeed in breeding any species of bird that has not previously been bred in captivity in Europe.







## CANDIDATES FOR ELECTION

- L. ANDERSON, Brunsfield, Falkirk Road, Galashiels, Selkirk, Scotland. Proposed by R. C. J. Sawyer.
- G. W. BAKER, 18 Belvedere Avenue, Lancing, Sussex. Proposed by Miss K. Bonner.
- W. BAYLEY, 32 Clivedon Road, Tilehurst, Reading. Proposed by W. Hepwood.
- Mrs. E. J. BIRCHALL, "Valleyfield," Pipers Lane, Heswall, Cheshire. Proposed by J. H. Reay.
- A. DE CARVALHO MONTEIRO, Praça dos Restauradores 13-2°, Lisbon, Portugal. Proposed by A. A. Prestwich.
- Dr. R. CASTAN, 16 Brd. Président Fallières, Gabès, Tunisie. Proposed by A. A. Prestwich.
- W. A. DANECOURT, Hartley, Dartford, Kent. Proposed by Miss K. Bonner.
- G. C. N. DAVIES, P.O. Box 1155, Lourenco Marques, Portuguese East Africa. Proposed by A. A. Prestwich.
- T. DEAN, 35 George Street, Louth, Lincs. Proposed by Miss K. Bonner.
- J. DOLAN, 1469 West Avenue, Bronx 62, New York, U.S.A. Proposed by A. A. Prestwich.
- J. G. EASTMAN, Columbine Cottage, Domewood Estate, Copthorne, Nr. Crawley, Sussex. Proposed by Miss K. Bonner.
- E. EGAN, 16 Tewkesbury Avenue, Droylsden, Nr. Manchester. Proposed by Miss K. Bonner.
- W. J. ENTWISTLE, Newfoan Isle, Galashiels, Selkirk, Scotland. Proposed by R. C. J. Sawyer.
- F. FANNING, Box 1782, Abilene, Texas, U.S.A. Proposed by J. M. Vaden.
- Major J. FINDLAY, D.S.O., F.R.Z.S., Cosy Bank, Cults, Aberdeenshire. Proposed by J. F. Inglis.
- H. E. M. GLASS, Gledhow, P.O. Stanger, Natal, South Africa. Proposed by Dudley Nourse.
- G. GRAHAM, 56 Market Square, Duns, Berwickshire. Proposed by G. J. Gray.
- R. E. GREED, Bristol, Clifton and West of England Zoological Society, Clifton, Bristol 8. Proposed by A. A. Prestwich.
- J. GREEN, The Woodford Pet Stores, George Lane, E. 18. Proposed by D. M. Reid-Henry.
- Mrs. R. GRELLIER, Swindon Hall Farm, Swindon Village, Cheltenham. Proposed by Miss K. Bonner.
- K. S. HARRAP, 2 Colchester Avenue, Prestwich, Nr. Manchester, Lancs. Proposed by A. A. Prestwich.
- Mrs. P. INGRAM, 46c Edwardes Square, London, W. 8. Proposed by R. C. J. Sawyer.
- M. C. LANCASTER, B.Sc., M.R.C.V.S., Flat D, 26 Belsize Park Gardens, N.W. 3. Proposed by Dr. W. C. Osman Hill.
- Mrs. E. M. LONSDALE, Grove House, Stapleford Abbots, Essex. Proposed by C. H. Wastell.
- P. MANTLE, 14 Parker Road, Ely, Cardiff. Proposed by Miss K. Bonner.
- E. C. MARTIN, 28 Cedar Grove, Copnor, Portsmouth. Proposed by Miss K. Bonner.
- A. NELSON, 301 N. Rural Drive, Monterey Park, Calif., U.S.A. Proposed by P. E. Schneider.
- Mrs. F. NIX, 1007 N. Zangs Blvd., Dallas 8, Texas, U.S.A. Proposed by J. M. Vaden.
- A. E. PALMER, 66 Burt Drive, Cotswold, Port Elizabeth, South Africa. Proposed by D. H. S. Risdon.
- P. G. PARIS, Boskenna, St. Buryan, Cornwall. Proposed by J. H. Reay.
- J. P. PETERSEN, Nyborgvej 46, Odense, Denmark. Proposed by J. Dalborg-Johansen.
- Miss R. F. PHILLIPS, 488 Shirley Road, Hall Green, Birmingham 28. Proposed by Miss K. Bonner.
- Dr. M. A. RAEVEN, Houwelingenplantsoen 8, Vught, s' Hertogenbosch, Holland. Proposed by Dr. H. Bauer.



Mrs. A. O. RICHARDSON, 1317 Poplar Street, Abilene, Texas, U.S.A. Proposed by J. M. Vaden.

J. S. RIGGE, Old Broadgate, Millom, Cumberland. Proposed by A. A. Prestwich.

W. H. ROSE, 44 Sapcote Road, Hinckley, Leics. Proposed by Miss K. Bonner.

Dr. N. A. ROSSITER, 130 Rosetta Road, Durban, Natal, South Africa. Proposed by W. R. Carthew.

J. V. ROUILLARD, P.O. Box 72, Stanger, Natal, South Africa. Proposed by Dudley Nourse.

Mrs. E. SCHENCK, 58 Coleridge Road, Walthamstow, E. 17. Proposed by Miss K. Bonner.

J. W. SMITH, Henham Lodge, Henham, Herts. Proposed by D. M. Reid-Henry.

H. C. STEPHAN, Mouille Grange, Mouille Point, Cape Town, South Africa. Proposed by P. Sutton.

R. H. TATT, The Willows, Downham Market, Norfolk. Proposed by I. Baty.

G. L. TEAL, 1981 Sayles Blvd., Abilene, Texas, U.S.A. Proposed by J. M. Vaden.

J. THORPE, Perrivale, Elmore Lane, Quedgeley, Gloucester. Proposed by A. A. Prestwich.

T. H. TYRELL, Bridge House, Brydekirk, Annan, Dumfriesshire. Proposed by J. H. Reay.

M. S. VERNON, 23 Osbaldeston Gardens, Gosforth, Newcastle-upon-Tyne. Proposed by J. W. Clemitson.

H. P. VLEMMIX, H. Vlemmix' Vogel-en Dierenhandel, Bisschop Zwijsendstraat 116, Tilburg, Holland. Proposed by Miss K. Bonner.

W. A. WINGATE, De Lunn Buildings, Jewry Street, Winchester, Hants. Proposed by A. A. Prestwich.

#### READMITTED

Mrs. C. M. COOPER, "Villa D'Este," Burges Road, Thorpe Bay, Essex.

J. STARK, c/o Mrs. F. W. Boote, 6 Percy Road, Handbridge, Chester, Cheshire.

#### CHANGE OF ADDRESS

H. TEMBLETT, to P.O. Box 37, Maseru, Basutoland, South Africa.

#### NEW MEMBERS

The twenty Candidates for Election, proposed in the November-December, 1953, number of the AVICULTURAL MAGAZINE, were duly elected members of the Society.

#### DONATIONS

(Coloured Plate Fund)

	£	s.	d.
J. SPEDAN LEWIS . . .	4	0	0
J. A. SWAN . . .	3	3	0
A. LAMB . . .	2	2	0
G. S. MOTTERSHEAD . . .	2	0	0
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D. M. COWARD . . .	1	0	0
H. COWLEY . . .	1	0	0
SAUL C. CORWIN . . .	15	0	



## MEMBERS' ADVERTISEMENTS

*The charge for Members' advertisements is ONE PENNY PER WORD. Payment must accompany the advertisement, which must be sent on or before the 15th of the month to A. A. PRESTWICH, 61 CHASE ROAD, OAKWOOD, N. 14. All members of the Society are entitled to use this column, but the Council reserves the right to refuse any advertisements they consider unsuitable.*

### WANTED

Hen Blue-rumped Malay Parrot.—J. W. CLEMITSON, 25 St. Paul's Gardens, Whitley Bay.

Severn Wildfowl Trust Annual Reports, 1947-48, 1948-49.—R. NEWLAND, 93 Arne Avenue, Parkstone, Dorset.

Pair of 1952 White Peafowl, and White and Javanese Green Peafowl Eggs.—P. J. GLOVER, Delamore Farm, Cornwood, South Devon.

Hanging Parrots—cock Vernal, hen Blue-crowned.—G. E. WHITMORE, 168 High Street, West Bromwich, Birmingham.

Pair of Demoiselle Cranes, acclimatized, for Spring delivery.—J. D'EATH, The Grove, Hadley, Barnet, Herts.

Tui, Tovi, All-green, Canary-winged, Lineolated Parrakeets; Conures, all species, single or pairs.—A. A. PRESTWICH, 61 Chase Road, Oakwood, London, N. 14.

Hens—King, Crimson-winged, Pileated, and Splendid: also cock Roseate.—V. J. LUCAS, Park House, West Rasen, Market Rasen, Lincs.

### FOR SALE

Hen Barnard's Parrakeet.—V. J. LUCAS, Park House, West Rasen, Market Rasen, Lincs.

AVICULTURAL MAGAZINE, back numbers, uniformly bound in excellent condition, complete series up to 1946 less Vols. 1 and 3. Vol. 3 unbound, one monthly part missing. From 1947 to 1953 individual magazines unbound in mint condition. £45 for lot. J. GILLEN, Ballycraigy, Ballymena, N. Ireland.

### WATERFOWL RINGS

Members are reminded that the Society's special blue rings are always available. All Waterfowl in collections, both public and private, should carry them.

Size.		Price per dozen, post free.	
		s.	d.
2-3	Teal . . . . .	2	3
3	Wigeon . . . . .	2	6
4	Mallard, Pintail, etc. . . . .	2	9
4-5	Smaller geese . . . . .	3	6
5	Greylag . . . . .	4	0

Requests for rings should be addressed to the Hon. Secretary, Avicultural Society, c/o Zoological Society of London, Regent's Park, London, N.W. 1, from whom all particulars can be obtained.

### POST-MORTEM EXAMINATIONS

Attention is drawn to the following rules:—

Rule 1.—A short account of the illness should accompany the specimen. All birds to be sent as fresh as possible to Mr. W. Lawrence, The Zoological Society of London, Regent's Park, London, N.W. 1.

Rule 2.—A fee of 10s. and a stamped addressed envelope MUST be enclosed with the bird.

Rule 3.—No body or skin of any bird will be returned under any circumstances whatever.

ARTHUR A. PRESTWICH,  
Hon. Secretary.



COMPARATIVE STUDIES  
ON THE BEHAVIOUR OF  
THE ANATINAE

By  
DR. KONRAD LORENZ

Price 5/- post free

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61 CHASE ROAD, OAKWOOD,  
LONDON, N.14

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### PRESIDENT'S GARDEN PARTY

MR. and MRS. EZRA very kindly invite members of the Avicultural Society to spend the afternoon of Saturday, 19th June, at Foxwarren Park, Cobham, Surrey.

Members who intend to be present *are requested to notify the Hon. Secretary, A. A. PRESTWICH, 61 Chase Road, Oakwood, N. 14, not later than 12th June, and to state whether they require a seat in the special motor coach which will leave the Offices of the Zoological Society of London, Regent's Park, N.W. 1, at 2 p.m.*



THE UNIVERSITY OF CHICAGO

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# AVICULTURAL MAGAZINE



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# THE AVICULTURAL SOCIETY

Founded 1894

**President : A. Ezra, Esq., O.B.E.**

**Hon. Secretary and Treasurer : A. A. Prestwich, 61 Chase Road,  
Oakwood, London, N. 14.**

**Assistant Secretary : Miss Kay Bonner.**

Membership Subscription is £1 per annum, due on 1st January each year, and payable in advance. Life Membership £15. Subscriptions, Changes of Address, Names of Candidates for Membership, etc., should be sent to the Hon. Secretary.

## THE AVICULTURAL SOCIETY OF AMERICA

**President : M. Jean Delacour.**

**Secretary-Treasurer : Ivo Lazzeroni, 5034 Templeton Street, Los Angeles 32  
California, U.S.A.**

The annual dues of the Society are \$3.50 per year (foreign dues \$3.75 or £1 7s.), payable in advance. The Society year begins 1st January, but new members may be admitted at any time. Correspondence regarding membership, etc., should be directed to the Secretary-Treasurer. Members of the Avicultural Society may become members of the Avicultural Society of America on payment of \$1.00 per year.

## THE AVICULTURAL MAGAZINE

The Magazine is published bi-monthly, and sent free to all members of the Avicultural Society and Avicultural Society of America. Members joining at any time during the year are entitled to the back numbers for the current year on the payment of subscription. All matter for publication in the Magazine should be addressed to :—

**The Editor : Miss Phyllis Barclay-Smith, 51 Warwick Avenue, London,  
W. 9. Telephone : Cunningham 3006.**

The price of the Magazine to non-members is 5s., post free, per copy, or £1 10s. for the year. Orders for the Magazine, extra copies and back numbers (from 1917) should be sent to the publishers, Stephen Austin & Sons, Ltd., 1 Fore Street, Hertford, England. Telephone : Hertford 2546-9.









MOUNTAIN BLUE ROBINS  
Adult birds and young.



# AVICULTURAL MAGAZINE

THE JOURNAL OF THE AVICULTURAL SOCIETY  
AND THE AVICULTURAL SOCIETY OF AMERICA

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MARCH-APRIL, 1954

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## THE BREEDING OF THE MOUNTAIN BLUE ROBIN

(*Sialia currucoides*)

By KENNETH A. NORRIS (Purley, Surrey, England)

Owing to the very strict protection of the Blue Robins in their native countries of Canada and North America, these birds are familiar only to the few aviculturists in England who have been fortunate enough to procure the few specimens which have so rarely been imported during recent years. Of the three species, *Sialia sialis*, *S. mexicana*, and *S. currucoides*, the latter is probably the least known.

Its range includes Western North America and Canada, from the West Coast east to Manitoba and north to the Yukon and Mackenzie Valley. During the past few years it has been extending its range eastward and is said now to be more or less well established as far as central Manitoba.

According to Taverner's *Birds of Canada*, its choice of nesting sites is very varied and it is equally at home in the hollow cornices of buildings, dead tree stumps, old Woodpecker holes in telegraph posts, or in nest-boxes hung about the buildings and trees of the prairie homesteads. In wild barren country it is found nesting in crannies in the rocks and cliffs—in fact, its only requirement seems to be a suitable hole to shelter the nest, irrespective of where it may be.

Mr. Reid-Henry's excellent portrayal of a pair of adult birds and one of their young renders a detailed description of their plumage unnecessary. It will be seen that they have much longer flight feathers and tail than our own familiar Robin, the legs being comparatively short and set well back on the body. As a result, their movements on the ground are awkward and the wings are used constantly to assist progress.

When resting on some favourite post or branch they assume an upright posture, the legs and feet being completely covered by the lower breast feathers, and in this position they more closely resemble



the Flycatchers in appearance. They will "hawk" after any flying insect which may come within range and seldom fail to catch a mealworm thrown into the aviary. Their remarkable agility on the wing, combined with their general structure and rather flattened beaks, suggests that, in a natural state, they must subsist largely on insects taken on the wing.

I was fortunate enough to receive an adult pair of these very lovely birds in June, 1952, and, as is my usual practice with new arrivals, they were housed in a large cage in the bird-room for the first month.

They settled down quickly and took readily to insectivorous food with the addition of a few gentles and six mealworms each, per day.

As weed seeds and soft fruit are said to form an important part of their diet in a wild state, these were also supplied at first, but the birds have shown no inclination even to sample them and they have since been discontinued.

In July they were moved to an outdoor, unheated aviary, measuring 9 feet by 5 feet, of which 3 feet is entirely enclosed to form sheltered sleeping quarters, the remainder being open wire flight, fitted only with artificial perching. This aviary they shared with Cedar Waxwings, an American Crossbill, and a pair of Golden Pheasants, but as the latter soon formed the habit of flying up to the various food dishes, either upsetting them or consuming all the food before the smaller birds had fed, they were subsequently removed.

The Robins remained in this aviary throughout the autumn and winter. Early in the following April the hen commenced to carry nesting material to an open-fronted nest-box measuring 6 inches by 4 inches by 6 inches, which was hung in the open flight, beneath the overhanging eaves of the sleeping quarters.

From past experience I have found it important, if success is to be achieved under artificial conditions, not only to provide suitable nesting sites but also the actual materials with which a species is accustomed to build, especially for the lining of the nest. A striking example of this had been provided by the Cedar Waxwings, which had nested in the same aviary the previous year. These birds, which had arrived in immature plumage, proved to be inexperienced in the art of nest construction, even failing to bind the materials successfully in a shallow woven cradle that had been provided as a foundation. As the hen was obviously on the point of laying, I decided to assist by supplying a "pre-fab", using for this purpose a very substantial Robin's nest from which the young had recently flown.

This the Waxwings accepted with every sign of satisfaction until they discovered the hair lining which was evidently not according to Waxwing specification, for together they stood on the edge of the nest and literally ripped it out. They then quickly collected a quantity of small scarlet feathers shed by the Golden Pheasant and with these



formed a new lining to the nest in a remarkably short time, the first egg being deposited on the following day.

I was unable to find any description of the Blue Robin's nest in the books I had available and as soon as it became apparent that the hen intended to build, I supplied a variety of materials, including dead leaves, moss, fine roots, strips of birch bark, partly dry grass, small twigs, short lengths of soft hemp string, hair, and feathers. From this assortment she selected only the grass with which she formed a flimsy nest, lining it with finer grass.

She laid four days after commencing to build and incubated steadily for sixteen days, after which she left the nest and on investigation I found it to contain only one pale blue, unmarked egg, which was infertile.

This was no surprise as the cock had completely ignored the whole proceedings and had, in fact, displayed some hostility to any close approach of the hen during the early stages of building.

During the second week of May, however, he started to display, perching near the hen, in a crouching position with wings held partly extended and fluttering, thus showing to full advantage the brilliant blue of his upper parts, or hovering before her, with a blade of grass in his beak. Between displays, he constantly sang, or perhaps it would be more accurate to say "warbled", for so soft and sibilant were his notes that often only the movement of his throat revealed that he was singing.

Whenever mealworms were thrown into the aviary, he dexterously caught them in the air as a Flycatcher would take gnats or other winged insects and then, hovering directly above the hen, would offer them to her. Should she fail immediately to accept, he would gently tap her on the back with his feet. If she still failed to respond, he would then alight beside her and thrust the insect towards her until she took it in her beak. Even then it would sometimes be passed backwards and forwards several times before the hen finally swallowed it, and it was not until she had accepted three or four insects in this way that the cock would himself feed. Thus encouraged, the hen again commenced building, assisted occasionally by the cock who, however, did little more than carry nesting material which he passed to her at the entrance to the box, never himself entering or attempting to take part in the actual construction of the nest.

On 19th May she commenced incubation and although she usually left the nest when I visited with mealworms, she invariably returned almost immediately, nor did she ever appear when anyone else approached the aviary.

On 2nd June it became evident that young had hatched and both birds started carrying mealworms and gentles to the nest, having first prepared them by well chewing them between their mandibles until



they were limp and lifeless. Up to six were carried in the beak at a time and were very quickly distributed.

Dr. A. G. Butler, describing his success in breeding the Eastern Blue Robin, *S. sialia*, states that his birds never gave the young food which was not partially digested, feeding them from the crop, on a mixture of insects, vegetable, prepared insectivorous food, and also half digested and softened seed (*Foreign Birds for Cage and Aviary*, Part I, p. 25).

My birds *never* swallowed the insects and although they took prepared food readily before the young hatched, this was completely ignored when feeding commenced. Only live food was then taken and was fed by the beak and not by regurgitation.

Feeding continued for ten days and then suddenly ceased and the parent birds appeared to lose all interest in the nest. Examination of the nest-box and a thorough search of the aviary failed to reveal any signs of the young birds. On the following morning I noticed that the box was almost completely filled with hay and found that mice had taken possession, no doubt having dragged out the young birds and carried them below ground during the previous night.

Towards the end of June the cock again started to display and within a day or so the hen was building in a similar box, hung in the sleeping quarters, in a position which was fortunately inaccessible to mice.

On 2nd July she commenced incubation for the third time and on the 17th July both birds were again carrying food to the nest.

Until now the Robins had taken little notice of the other inmates of the aviary but possibly due to the loss of their previous brood, they suddenly became aggressive, particularly towards the American Crossbill. They continually drove it from perch to perch until the cock finally succeeded in pinning this unfortunate little bird to the ground where it commenced systematically to tear the feathers from its back, and would undoubtedly have killed it had I not been in time to separate them.

Having removed the Crossbill to another aviary, I thought it advisable also to remove the pheasants in order to ensure that the Robins should have all the food they required but the Waxwings were allowed to remain as, strangely enough, these birds were still completely ignored by the Robins nor did they ever attempt to approach the nest or interfere in any way.

After the birds had been feeding for a week, I ventured to look into the nest when the parents were out in the flight collecting insects, and found it to contain three small young, clothed in dense black down, relieved only by the conspicuous yellow line of the gape.

At this stage, the hen began to display resentment towards the cock if he approached the nest and although he made desperate, and occasionally successful, attempts to reach the young, she finally refused to allow him even to enter the sleeping quarters.



During the second week I again looked in the nest, to discover that the young had made quite remarkable progress and were well fledged, the colouring being very similar to that of the adult hen except that the breast was heavily spotted.

On 7th August I noticed the three young sitting, crowded together, in the entrance to the nest box. As soon as they saw me they slipped back and crouched in the bottom of the nest, but on the following morning one was on a low perch in the open flight and in the early afternoon it was joined by the other two.

As soon as the young left the nest, the hen again allowed the cock to approach them and both birds fed them at frequent intervals, no longer troubling to prepare the food but thrusting the wriggling insects well down the youngsters' throats. If an insect was inadvertently dropped, it was immediately retrieved by one of the parents and again thrust into an open beak and it was particularly interesting to note with what care each young bird was fed in turn. On no occasion did I see one bird receive a double dose, however clamorous or persistent it might be.

Just a week after the young appeared in the open, they commenced themselves to pick up insects, deliberately dropped in front of them by the parents and very soon afterwards became quite independent although the old birds continued to shepherd them into a sheltered position each night.

On 12th September and without any perceptible moult, intense blue began to appear on the wing butts of two of the young birds, and on 15th September I noticed blue also appearing on the crown of the head, immediately above the beak, followed a few days later by odd blue feathers on the breast.

The third bird remained unchanged in colour but the spotting of the breast began to fade and it was now obvious that there were two cocks and a hen. At this stage fighting commenced between the old and the young cocks and although I imagine that the adult bird was the aggressor in the first instance, the young soon became equally ready to start trouble, especially at feeding time. The old birds were already moulting heavily and I therefore caught up the young and placed them in a large cage in the bird room.

As soon as the young had been removed the parents resumed their normal daily consumption of prepared food and the live insect supply was reduced again to a small number of gentles and six mealworms each.

I subsequently disposed of one young cock but the remaining pair are still together and are doing remarkably well. The plumage of the cock has changed little since he was transferred from the aviary and it is now apparent that he will not assume his full, adult colouring until he undergoes his first complete moult but the young hen is practically indistinguishable from the old bird. Until recently they refused all



food except live insects, but are now taking a certain amount of insectivorous mixture and occasionally a very little finely chopped date.

During the whole period of nesting and rearing, nest sanitation was strictly observed, the excreta being removed by the parents and all deposited on a cross-bar of the flight door, the most distant point from the nest to which the birds had access. Even when the young left the nest, this habit of "clearing up after a meal" persisted for a few days, the old birds collecting and removing the excreta from below the perch on which the young were sitting.

Gentles and mealworms, in equal proportions, were the only live food supplied from the time of hatching until the young were removed from the aviary and were consumed at the rate of four ounces per day, an average of 1,020 insects a day continuously for nearly eight weeks and this by an abnormally small brood!

Under natural conditions, a brood probably consists of four to six young and I imagine the birds would be double brooded and might even produce three broods in a favourable season.

There can be no doubt, therefore, that the benefit derived from the presence of these and other small insectivorous birds in agricultural and fruit growing areas is inestimable and the strict protection afforded them by the Governments of Canada and America is more than fully justified.

\* \* \*

## NOTES ON THE CYANISTIC PHASE OF THE INDIAN RINGNECK PARRAKEET

By DAVID WEST (Montebello, California, U.S.A.)

Colour variations among normally green birds do not seem to be of a too rare occurrence. The amazing little Budgerigar occurs in dozens of colours, and other birds with large areas of green plumage which appear subject to variation are Masked and Nyasa Lovebirds and, in addition, there are Plumheads, lutino and blue phases of the Alexandrine, and lutino and blue phases of the Indian Ringneck Parrakeet.

The earliest references to this colour phase appear in the 1920's in the AVICULTURAL MAGAZINE and Hachisuka's *Variations Among Birds*. From published information it appears that at least one, and more likely two, blue examples of the Indian Ringneck Parrakeet were kept by a Mr. M. G. Mallick, of Calcutta, during the 1920's. From conversations with people who saw these birds in India it would appear that both birds were cocks, were kept in individual cages, and that no attempt was made to breed from them in order to perpetuate this colour phase.



Continuing chronologically, the next reference to blue Ringnecks is the 1941 record of the example which Mr. Sheffler raised in his Arizona aviary. This bird was reared from normal parents, and it was a great tragedy that it was killed when only a few weeks old when Mr. Sheffler tried to catch it for removal to other quarters. Although the parents of this bird were kept for twelve years they never again repeated their 1941 success. Mr. Sheffler recently told me that this bird, like those currently in England and in California, was powder-blue in colour.

After the end of World War II there is a notation in the AVICULTURAL MAGAZINE of an English soldier seeing a blue Ringneck among a flock of green ones while on duty in India. An American dealer also told me that during a 1949 trip to India he saw a tame and talking blue Ringneck which belonged to a poor Indian farmer. Although repeated attempts were made to secure the bird nothing eventuated and the dealer was forced to give up the idea of securing this bird. There is always the possibility that this bird might have been useless for breeding purposes if it were too tame.

During 1950 two blue Ringnecks were offered by an Indian dealer to a Californian fancier for the sum of \$1,000. At this time it was believed that they were the only pair in captivity anywhere in the world. As if the price were not enough of a drawback American importation regulations would have made it virtually impossible to secure the birds anyway, so rather regretfully a negative answer was sent back to India.

Although I have no valid information from the late Duke of Bedford it would appear logical that the pair of blue Ringnecks he secured from India through the efforts of Mr. A. Ezra in 1950 were this same pair offered to the Californian fancier. The Duke mentions in an article that this pair consisted of an adult male and a young female and that neither bird appeared to have been in captivity very long. One cannot help but wonder if these birds were wild caught, or is there someone in India breeding blue Ringnecks?

Certainly the pair sent to Woburn did very well for they reared a total of eleven young in three seasons. The actual numbers were as follows ; in 1950 an interest was shown in the nest but the female was too young and nothing eventuated ; in 1951 three were reared ; in 1952 four were reared ; and in 1953 another four were reared. In the 1953 season a blue cock mated to a lutino hen also reared two green youngsters.

The possible colour variations made possible by correctly mating the lutino and blue phases will certainly open a new field of endeavour for the aviculturist. An albino Ringneck is now a distinct possibility and should be a really lovely bird if it retains the red bill and the pink ring about the neck. Now that the Keston Foreign Bird Farm has



succeeded in breeding a nearly pure lutino Alexandrine (by mating a female lutino Ringneck to a cock Alexandrine and then mating the split sons back) the same method could be used to produce a blue Alexandrine and then with these lutino and blue Alexandrines an albino Alexandrine could be anticipated.

At the present time there are just thirteen blue Ringnecks in captivity. Of this number four birds are here in California, eight are in England, and one on the Continent. One can only hope that they will all continue to prosper and that soon their present "unlucky" number will be a much higher figure.

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Supplementing Mr. West's notes, there are nine blue Ringnecks in this country. If his information regarding one being on "the continent" is correct there are therefore more than the "unlucky thirteen" in captivity.

When the late Duke of Bedford's collection was so lamentably dispersed, the original breeding pair passed into Mr. Boosey's care. The 1950 trio, one hen and two cocks together with the two 1953 green young bred from a blue cock and lutino hen were acquired by Mrs. Clark, of Bromsgrove, and the four remaining immature birds came to Ballinger.

It is hardly necessary to say that every effort is being made to establish this magnificent colour variation. This desirable goal will take time to achieve in view of the lengthy period taken to attain maturity and the difficulty of sexing birds in the meantime. There is also the desirability of introducing unrelated blood which of necessity must either be normal or lutino strain since there are no other blue birds available so far as is known.

One other point is worthy of mention, namely that in 1934 our president, Mr. Ezra, successfully reared a blue Alexandrine. The parents were a blue cock mated to one of his daughters by a normal hen.

E. N. T. V.

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NOTES ON CAPTIVE RED-LEGGED  
PARTRIDGES

By DEREK GOODWIN (Virginia Water, Surrey, England)

*ALECTORIS RUFA*

Upper parts brown, wine-red tinge on hind-neck. White superciliary stripe. Throat white, bordered black, with laced pattern extending from black border. Breast blue-grey, belly deep golden buff. Flanks barred chestnut, black and white on blue grey ground. Bill, legs and eye-cere red, eyes brown.

Although, like most bird-watchers, I had long admired the beauty of the Red-legged Partridge, *Alectoris rufa*, it was by a pure accident that I first started keeping these birds. Wandering with a friend along an overgrown bank at a local sewage farm one morning in late July, 1952, I nearly stepped on an incubating Red-leg. As it flew off it became entangled in some weeds and struggled frantically for some seconds before it succeeded in tearing itself free. On our return at 6 p.m. we were, therefore, hardly surprised to find it had not returned. We decided to give it another 24 hours, and in the meantime I inquired frantically, but in vain, for a broody bantam, and I had to use a large black hen, the only broody obtainable. The following evening the Partridge's nest was obviously deserted. One of the eggs had been removed, and was lying—unharmful—several



yards away. I took all eight, and put them under the hen, and after four days they started to chip. Soon two had "caved in" with the weight of the hen, and all would doubtless have been crushed, but by good luck a broody Cochin bantam was procured just in time. This bantam had only begun to sit some eight hours before, but she reacted appropriately to the hatching eggs, sitting "lightly" and "talking" tenderly to the unhatched chicks. Of the eight eggs, five hatched, and the two somewhat flattened ones—from which, of course, the chicks could not extricate themselves—I successfully opened at the correct time. The eighth egg contained a dead chick. The net result was seven strong and healthy chicks, which, as the well-developed eggs had been left deserted and cold for some thirty-six hours, was rather remarkable. The newly hatched chicks were the most delightful objects, in soft buff and brown down, their rather short and sturdy legs being dull yellow, spotted with blackish, a rather unusual colour scheme. I had feared that the chicks might be as hard to rear as Common Partridges, which are said to be even more difficult than the pheasants of the *Phasianus* group. Luckily this was not the case, and the young Red-legs proved as easy to rear as Golden Pheasants.

They were kept on the lawn in a pen, which was moved daily. At first the young Partridges could slip in and out through the one-inch mesh, and two vanished at this stage, doubtless carried off by some predator. At about five weeks old the young birds had begun to find the narrow confines of the pen irksome. They were liable to panic at a sudden approach (especially if one's lower garments or footwear was at all unusual)—and spent much time running up and down the wire. They were then moved to a large aviary (about 20 feet by 40 feet) together with their foster-mother, and within a few days became exceedingly tame and unafraid. A few weeks later the bantam was taken away. The Partridges, although for some time they had appeared to have little regard for her, or she for them, were much demoralized by her disappearance, and ran about trying to get out, stopping every few minutes to give the rally call. After a couple of days, however, they appeared to have quite forgotten her.

In mid-November three of the five became ill, their faces swelled up and frothy mucous ran from their eyes and nostrils. This would appear to have been similar to, and probably homologous with, the eye-disease described by Hastings (1953). At all events it seemed to have been due to lack of Vitamin A, and giving the birds halibut oil speedily cured them. The whole question of feeding I will deal with later on.

From the fact that three of the birds were noticeably bigger and heavier than the others, I rightly guessed that they were three cocks and four hens. I gave away a pair and kept the other five together

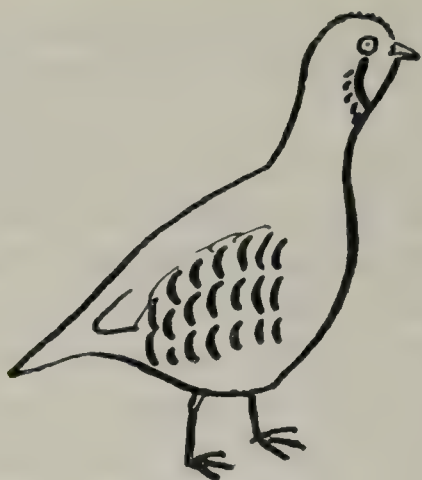


in a large aviary, intending to separate them in early spring, when I expected they would start to form pairs and to quarrel among themselves.

From February, and increasingly onwards, the Partridges showed considerable unrest. They ran restlessly up and down the wire, stopping every few minutes to give the flight-intention call, a throaty "Tschrech! Tschrech!" similar to the alarm call (for ground predator), often intensifying it to a tern-like "Tschree-ach!" as they made the preparatory movements for flying away, and often did in fact fly up on to some perch or ledge. I saw, indeed, some low intensity forms of behaviour associated commonly with pairing display, displacement-feeding, etc., but did not then recognize the import of such signs. Even by the 8th April, no pairs had formed, and there had been no fights (wild Red-legs normally pair in February or the first half of March). With Red-legged Partridge—as with many other birds—individuals that have been brought up together do not easily form pairs among themselves. This indecisive state of affairs continued until about mid-April, when I went away for four days. During my absence one of those "accidents" such as so often happen when one leaves one's birds in well-meaning but incompetent hands occurred. The aviary door was left open, and all the Partridges (and worse my old cock Jay "P") escaped, and were lost, shot in all probability, I fear.

I thought that was the end of my Partridge-keeping, but it was not. A friend on holiday in Norfolk a month later happened to mention my loss to a gamekeeper, and the latter very kindly gave him eight Red-legs' eggs as a gift for me. These were put under a borrowed bantam hen, and all hatched. Three of the chicks were lost to predators, but the others thrived, including one that was crippled at an early age owing to a heavy piece of wood falling on it. These chicks were kept for some time in the moveable pen on the lawn. Theoretically this should have been better for them, but except perhaps from a sanitary point of view it was not. At about five weeks old one or two of the chicks began to get rather wild. This wildness increased until at about seven weeks all would show some alarm, and a sudden approach or, more particularly, anything new in my appearance, would set them madly beating at the wire. In desperation I moved them to a large aviary. It then became evident that their fears had been aggravated by the lack of cover in the pen on the open lawn, and the fact of being unable to move to some distance from the alarming object. At first they ran away whenever I moved in the aviary, but soon returned to my vicinity. Within three days they were feeding freely from the hand, and only walking off a short distance when I moved, and within a week they were extremely tame, hardly bothering to get out of my way when I walked about.





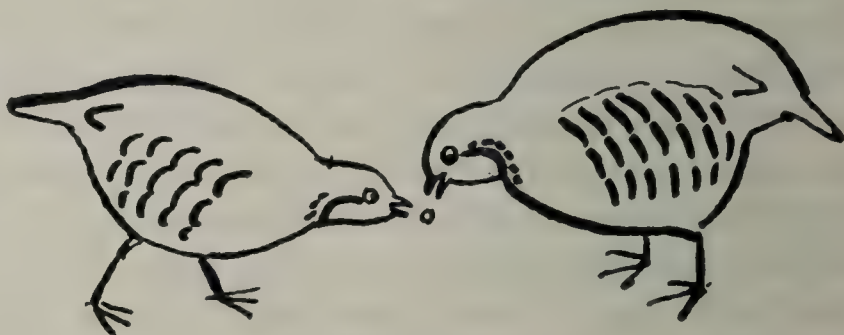
Alarmed.



Brooding Chicks.



Resting.



♂ Feeding ♀.



Standing in Rain.



Giving Rally Call.

In the late autumn I received back the pair of 1950 birds which I had given away, as their owner was disposing of her game birds. This pair had always been tame, but were evidently upset by being caught up and conveyed in a box on the back of a motor-cycle. They were released together into a large aviary and showed considerable timidity. Within twenty-four hours the cock had completely retamed, but his sister remained extremely wild. For several weeks a close approach would send her crashing madly about. Indeed, in fear of her injuring herself, I released her, but she returned persistently to the garden. So I caught her up again and returned her to captivity after cutting off every other primary and a few secondaries in each wing. This does not prevent a game bird from flying, but does make it unlikely to achieve sufficient velocity to injure itself seriously when



it rises in sudden alarm. She gradually became somewhat tamer, but would never again feed from the hand, and always fled at the approach of strangers.

After a short time I introduced this pair to the other birds. These latter received them with the "Who's that?" "A stranger!" "Then chuck a brick at him!" attitude not uncommon among allegedly more rational bipeds. The timid hen Partridge, scared of the human beings present, ran wildly to the far end of the aviary, but her brother stood his ground. The original inhabitants approached in a stealthy manner, aggressiveness being obviously tempered by caution. They went into aggressive display, but the newcomer (hereafter to be called "P") was not intimidated, and he displayed back. A fight soon ensued, the two males pecking at each other's head, and trying to jump up and beat each other with their legs; when they failed in this endeavour—which they usually did—they would seize a billful of their opponent's neck feathers and tug doggedly. The three females crowded around displaying, their aggressiveness being evidently not sufficiently aroused to stimulate them to fight. During a lull in the battle the lame hen, perhaps overestimating her abilities as we all so often do, suddenly attacked the strange cock. She soon had cause to regret her temerity, for he at once counter-attacked. She was seized, thrown down, and beaten severely, and as soon as she could tear herself free she fled precipitately into the depths of a rhododendron bush with all the aggressive drive knocked out of her. Since the two males "P" and Red—so-called from his ring colour—showed no signs of ceasing hostilities, and had begun to show signs of exhaustion, I separated them and shut the former in a small wire pen inside the aviary, thinking that within a day or two they would have got reconciled to each other's presence. This plan was successful, although a day's close confinement had an almost too-depressing effect on the male "P", who on release showed very mild and timorous behaviour for some time.

Nothing very interesting happened, or rather was observed, for some time, except that one night some unknown predator dug in under the wire and took one of the Partridges, fortunately a hen. At some trouble and expense wire netting was sunk all round the aviaries to forestall any repetition of such feats. In late winter, and increasingly as the days got lighter, the Red-legs showed the same unrest as their predecessors had done, and likewise gave no signs of pairing. I noticed that if the male Red started to display, as he often did when approaching other birds after having been at a distance, "P" would tend to walk up to him, and sometimes go right up to him and "false-feed" at his feet. This I suspect was behaviour of an appeasing or submissive nature, as false-feeding (of which I shall have more to say later) appears to be essentially a peaceable gesture. I did not then



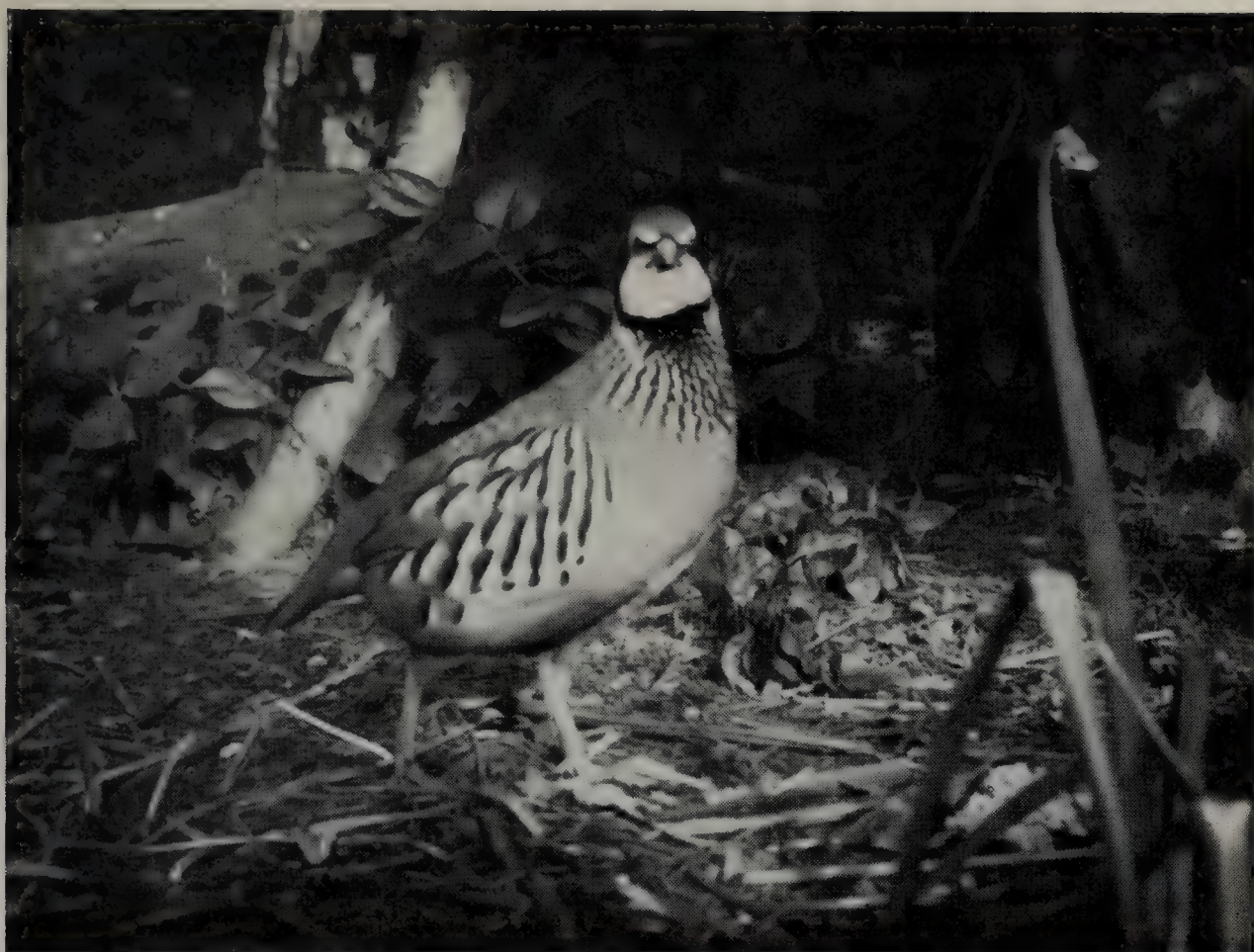
know the submissive posture, so cannot be sure if "P" showed it at low intensity on these occasions, but I think it probable that he did.

As by late March no pairing appeared to have taken place, I decided to try to expedite things. I left Red and one of his sisters—who was the tamest of all the females—in the original aviary, and moved "P" and his mate of the previous year (who it will be recalled was his sister) to another aviary a few yards away, and put the lame hen in with them. "P," within a few minutes of finding himself separated from Red, regained all his original self-confidence, and gave vocal expression to his altered feelings. Red was not slow in answering his challenges, and for some considerable time thereafter much of each day was enlivened by the two male Partridges singing against each other. The song of the Red-legged Partridge, although not lacking in vigour or persistence, is calculated rather to intimidate the conspecific rival than to charm the human listener.

After about a week it became quite clear that the male "P" and the crippled hen had paired. The two birds in the other aviary were, however, merely carrying on a wholesome platonic friendship, and had no deeper interest in each other, whilst the timid hen ran unceasingly up and down the wire opposite as if she wished to return to their aviary. Since it seemed unlikely that Red and his sister would pair, I put the timid hen in their aviary, and watched events. She at first fled, terrified at having been handled, but in a few seconds she came out of cover and made a "dead set" at the male. Within five minutes they had displayed mutually to each other, copulated, and prospected a possible nest-site. Her matrimonial ambitions and status thus having been consolidated the timid hen turned her attention to her sister-in-law, attacking her with that irresistible, self-righteous fury that Partridges—like some other bipeds—are apt to show when they suppose their sexual interests threatened. The victim showed no resistance, but only extreme fear—in my experience the usual, though not invariable, reaction of a female Red-leg to actual physical aggression—fleeing wildly about the aviary, and when cornered submitting without resistance to the other's attacks. Needless to say I soon rescued her, feeling a wholly unreasonable aversion for the timid hen because of her very human-like behaviour in continuing to ill-treat an unresisting enemy. The rescued bird was placed in the other aviary. Here the crippled hen, as "lawful wife" of the male, received her in a similar spirit, but owing to her physical disability, was unable to translate her feelings into effective action. After a few days she began to tolerate her rival, and soon they settled down to a "ménage à trois" with at least no overt signs of hostility. It seems tolerably certain that such a trio could never form or hold together in a wild state.

The hen of the pair by themselves soon started to lay. The cock





Copyright]

[D. Goodwin

MALE RED-LEGGED PARTRIDGE (RED RING) IN (PARTIAL) DISPLAY.



Copyright]

[D. Goodwin

MALE RED-LEGGED PARTRIDGE (RED RING) WITH CHICKS FIVE  
DAYS OLD.

[To face p. 54.







had already made two nests, one under some brushwood in a corner, and one under the edge of a rhododendron bush. The first egg was deposited in the latter, but to my surprise no more appeared in the next few days. I could see no other nest from a casual inspection, but when some ten days or so later I made a thorough search, I found a nest with eight eggs well hidden on the ground in the middle of the small rhododendron bush. Doubtless the first nest had been deserted owing to my paying too much attention to it.

When this nest contained nineteen eggs—which were laid at the rate of about four per week, but I regret I kept no exact count—the cock scraped out a fresh nest in a far corner under some conifer branches. The hen then continued laying in this second nest until eighteen eggs had been deposited in it. I began to fear that the birds did not intend to sit, but a few mornings after laying her last egg, I found the hen on the second nest. That day the cock bird showed a remarkable progressive change in behaviour, becoming hourly more silent and self-effacing. His air of aggressive masculinity changed in twelve hours to one of cowed and conscience-stricken femininity. Next day he commenced to incubate on the first nest.

That night there was heavy rain, and both Partridges came off the nest at dawn, and three hours later showed no signs of returning. I feared they had deserted, but about 11 a.m. both went back on their respective nests. At first they came off each morning and evening for some ten to twenty minutes or more, but as incubation progressed the off-duty spells became shorter, and the evening one dropped out. For the last four days I saw neither bird off the nest at all, and am fairly certain they did not come off. I had left them each about a dozen eggs, but some did not hatch, and were found on examination to have small "hair-cracks" in them. Possibly the Lanceolated Jays in the same aviary had pecked inquisitively at them, though they had not actually broken any. When the first of the twenty chicks that did hatch poked its head from under the mother, the lame hen Jay at once hopped up, seized and flew away with it. The Partridge did not seem to grasp the significance of this incident, and showed no signs of resentment. I was in a quandary since the Jays were then (mid July) in full moult, and the last thing I wished to do was to handle them. With acumen rare to me, I thought of the solution, cut a large hole in the side of the aviary and another in that of one near by, connected the two with a wire funnel, and easily drove the Jays into exile.

When the young Partridges were led from the nest it became abundantly clear that their parents had no interest in each other, but were solely concerned with the young. They did not quarrel, but the male would give his note of protest if the female came near when he was brooding. Owing to the chicks not distinguishing father



from mother, the broods were often unequally divided, and one saw the ludicrous spectacle of one parent uncomfortably brooding sixteen or seventeen, whilst the other had only one or two chicks beneath it.



Adult Brooding Month-old Chicks.

As with other game birds, the parent Red-leg reacts violently to the sound of a chick in distress or to the sight of some innately recognized enemy, but it is a case of "out of sound, out of mind". So long as there are no overt reminders of the rest of the family, it is quite "happy" with even a single chick. Stupid though this behaviour may seem to the minds of animals capable of conceiving the Atomic Bomb and the Inquisition, it is, nevertheless, obviously adaptive. When irrevocable disaster has overtaken the majority of the brood it is clearly of great biological advantage that the parent should be able to concern itself wholeheartedly with the welfare of the survivors, instead of vainly fretting over the dead which no power on earth can bring to life again.

After the first week the chicks' mobility increased; they were constantly roaming the whole aviary, and had learnt that my appearance meant food. Their timid mother usually ran to the far end of the aviary, especially if any stranger appeared, and tried to call the chicks away. They, however, soon learned to ignore her under these circumstances, and would come running up to me with their father, who was perfectly tame.

More surprising than the chicks failing to be influenced by their mother's wildness was her lack of response to their tameness. Two of the chicks died when three weeks old, but the remaining seventeen were reared. Despite the fact that she was now in company of eighteen other Red-legs, all of whom were extremely tame, the old hen still remained wild. It is often thought that birds are greatly influenced by the behaviour of their companions, but in my experience this is usually only so if they have no "preconceived ideas" on the object evoking their companion's behaviour. A bird that is afraid of a person



seldom shows any less fear because a fellow-captive greets his appearance with eagerness. Nor, on the other hand, does a tame bird often become wild if associated with a timid comrade.

When moulted out into their adult plumage the seventeen young Partridges made a delightful picture. They were very tame, and some of them would even perch on my arms and shoulders to be fed. The food bill was, however, considerable, and I had not sufficient space, so I reluctantly decided to part with the majority. I thought that the best chance of their getting to good homes was to give them away. In this I may have been wrong, as many people value more something they have paid a high price for than something that has cost little or nothing. Accordingly, I put a note to the effect that I had some Red-legs to spare in our Magazine. The result was overwhelming, and I was not able to reply to all the letters I received, though I read them all more than once. Finally, the spare birds were all sent off to their new homes with sundry members of the Avicultural Society. One of the latter neither acknowledged receipt of the birds nor—in spite of repeated requests—did he ever return my travelling-cage to me. The four other members sent me nice letters of thanks, and promised to let me know how the birds fared. None of them did so and when, a year later, I made inquiries I learned that in two cases the birds had been killed by stoats or foxes. The other two did not bother to reply at all to my letters, so I rather fear their Partridges had also come to grief by some accident, or else been sold or eaten!

The "trio" of Red-legs in the other aviary laid three nests of eggs. Both hens laid in the same nest. The impulse to lay in a nest already containing an egg or eggs, rather than an empty one, is very strong in game birds, and has of course long been utilized by keepers of domestic fowls to induce their birds to lay in nest-boxes where the eggs can be gathered. In a wild state this impulse is biologically useful, since it ensures that the bird will lay her later eggs in the same place as the first and not in one of the innumerable other sites that are in other respects "just as good". Like many other innate impulses—and not only those of the class Aves, this one can prove harmful where man has altered the natural state of things. If the gravid female game bird finds a nest already containing eggs, she will lay in it rather than make one for herself elsewhere. This happens very rarely where wild game birds are at a normal density, but often in areas where game-preservation holds sway. Everyone knows how common an occurrence are nests containing the eggs of two or more females—often of different species—in English game preserves. In the case of the captive Red-legs the fact that the male usually takes the initiative in selecting the nest site also probably affected the issue, since the male scratches out another nest, to which he calls the female when the first is full of eggs.



In this aviary only one female (the sound one) incubated, on the last of the three nests. Unfortunately, she became ill and died quite suddenly after sitting for twelve days. Neither the male nor the crippled female went broody. I thought at the time the male's failure to do so was because the female was still with him, but later observations changed my opinion. I now suspect that his failure to incubate (which he has shown also in 1953) is due to the fact that incubation in the male is accompanied by a psychological change to a furtive and non-aggressive mood. This would presumably be more "difficult" for an individual whose aggressive drive is extremely strong, as is the case with this male. Of course it is probable that some factors of captive life may also tend to inhibit incubation.

Having given away my surplus Partridges, I still retained six birds, thinking this an ample number for future study in view of my restricted time, space, and money. Unfortunately various disasters happened, culminating in an infestation of gapes that wiped out in 1953 all the remaining birds, except the two old males and two juveniles, one of which latter subsequently escaped and was lost. I am now left with three males, and all efforts to purchase some tame females have proved unavailing.

Some notes on the care of these birds may prove of interest.

#### *Food.*

I have found that Red-legs do well on a diet of grain (wheat and/or millet), with a little bread and milk (to which bemax and glucodin are added) about twice a week. This can be varied with dry whole-meal bread, and a few peanuts or small bits of cheese given by hand frequently, will help to keep the birds tame. Plenty of fresh green food is important. No matter how well fed otherwise Partridges like to eat quantities of green food. Cabbages and lettuces, especially such as have run to seed, brussels sprouts, etc., are all acceptable, but particularly fresh turves of grass and clover. From a turf they can pluck the grass-blades, clover leaves, seeding weed-heads, and so forth, in a natural manner, but such things as lettuces must be firmly tied or fixed between two bricks so the birds can peck at them. When breeding the hens especially often relish beetles, mealworms, and other insects, though in general they care little for them once adult. Probably if the diet were otherwise poor in protein they would eat them at all times. In the domestic fowl and Golden Pheasant the inclination to eat earthworms—which is usually only shown by growing young and laying females—can be stimulated by putting them on a low-protein diet. If the floor of the aviary is covered in parts to a depth of several inches with leaf-mould or similar litter, and millet thrown into this, the birds will take a lot of exercise scratching for the seed.

I expect any regime on which young pheasants are successfully



reared would suit young Red-legs. If mine are being reared by a bantam, I place them on the lawn in a pen, which is moved daily. If they can be obtained, I feed largely on the cocoons and grubs of the small ants (one reddish and one black) whose earth-heap nests are common in fields and roadside grass strips. The chicks also eat the winged male and queen ants, and sometimes—with less avidity—the workers also. In addition to this I give milk-sop to which a little bemax and glucodin has been added, a few mealworms or mealworm pupæ, and any other small insects that come to hand. After a week or two I add a little seed to the diet, and gradually get them on to the same diet as the adults. Growing young may be given the cocoons of the large wood-ant, but I do not like these for baby chicks as the fiercely fighting worker ants might do them some harm in the early stages.

At first the chicks are ravenously fond of mealworms, but in every brood I have reared they have "lost the taste" for them between four and six weeks of age, although still continuing to eat ant cocoons, cheese, broken peanuts, and other rich but non-motile food. When the Partridge chicks are reared by their own parents the same regime will suffice. So long as they are getting plenty of ant pupæ and green food, they take no harm from eating a certain amount of grain from an early age. Grit, clean water, and dust-bathing facilities must, of course, be provided for both young and old.

#### *Diseases.*

My first brood of Red-legs developed swollen faces, with running eyes and noses, in late November. This would appear to have been a form of Xerthalmia, or something akin to it (Hastings, 1953). The birds were quickly cured by giving each a few peanuts slightly coated with halibut liver oil daily until they improved. Since then I have given my Partridges a feed of grain treated with halibut oil, about once a week from October to May and have had no further trouble.

Gape-worm infestation, as I have narrated, wiped out most of my Partridges in 1953. The adding of T.C.P., permanganate of potash, and so forth to the drinking water has, in my experience, proved futile. Mechanical removal of gapeworms although often successful with Jays, proved no use with the Partridges. I have since found Barintar—a powder manufactured and sold by I.C.I.—effective in curing afflicted Jays, and hope that it will prove equally so for Partridges if mine are so unlucky as to be again attacked with this scourge. I may say that I found Aniodol Interne had no apparent adverse effect on gapeworms in Jays and Partridges. This is strange when so many members appear to have found it a certain cure for gapeworms in Starlings. Gapeworms are said to be often picked up through eating insects or worms that contain their eggs. This seems



likely to have been the case with my Partridges where the two laying females, and most of the young were infected, but not the two non-insectivorous adult males. Where young Partridges are reared by their own parents in aviaries, where the ground and its insect life are likely to be infected with gape-worm eggs, it is probable that the method suggested by Wilford Smith (1947) would prove a remedy. This consisted of thickly covering the floor of the aviary with dead bracken, so that the chicks did not come into contact with the earth.

#### *Pros and Cons.*

As aviary birds Red-legs can be recommended for their beauty, tameness (in most cases), and the ease with which they can be kept and bred. They are not, however, suitable for small aviaries. On the regime often accorded to gallinaceous birds in public aviaries (whose proprietors are sometimes, I suspect, in league with anti-bird-keeping circles) of corn *ad lib* and a lump of stale cabbage once a week, they most certainly will soon cease to be of any beauty or interest.

Their faults are those common to most largish ground birds. They foul the ground considerably (removing the droppings from and/or liming the roosting places will help to obviate this), and may cause considerable disturbance if they panic at night. Although not usually aggressive to weaker birds, they may be so at times, birds with young, and males in breeding condition whose aggressive drive is very strong, being the most likely offenders in this respect.

#### *Voice and Display.*

I shall only briefly mention these, as I have dealt rather fully with them in a recent paper (Goodwin, 1953) elsewhere, to which readers are referred. Einbeck (1834) also mentions this subject, and gives many interesting details about his captive specimens.

The most familiar note is the "rally call"—the loud, rather harsh "Chuk, chuk, chukuk, chukar!" This is used to indicate the bird's whereabouts to its young, mate, or companions when, for any reason, it has become separated from them. In spring the male utters a loud harsh rhythmical "song" which suggests a laboured steam-engine. At a little distance it is hard to believe that a bird, and not a locomotive, is responsible. These two calls are loud and far carrying, but the bird also utters a great many other notes, most of which are rather quiet, and hence not often known to sportsmen and others who are only familiar with the species at gun-shot range or further.

The commonest display is one in which the bird draws back its uplifted head at the same time "twisting round" the face and neck markings in a peculiar manner, so that they are displayed almost fully to one side. The barred flank feathers come up high over the wing on the "displaying side". The other wing is often drooped, so that



the primaries drag the ground. This display is primarily threatening, but it is shown between male and female—interspersed with food-calling and other appeasing gestures—during pair-formation. When feeling “inferior” and wishing to avoid fighting, a bird usually responds to any signs of aggressiveness by walking in a somewhat crouching “guilty-looking” posture. At a higher intensity of this feeling it will raise one or both wings above the line of the back, and at the same time spread out the primaries. In this movement the yellow-buff on the outer ends of the primaries and some of the secondaries become much more conspicuous than when the wing is folded normally.

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## FRIENDSHIP AND ENMITY BETWEEN BIRDS

By A. A. CLARENCE (Nunton, Nr. Salisbury, Wilts, England)

I have long been impressed by the loneliness of single birds and the friendships that ensue. Also by the cruelty of birds to their kind.

Among them the Orange-headed Ground Thrush is a good example. He seems to reserve his spleen for the hens of his own race. For the last three years I have had a pair of these birds in a 40-foot aviary. On Christmas Day the cock slew his hen with evident pleasure, and left her corpse without feather on head, neck, and back.

I arrived on the scene just after he had committed the murder, and found him perched above preening his feathers, and obviously saying “well, good-bye to all that”. Possibly the reason for his action was that for two seasons he had carefully built perfect nests which had been ignored by the hen. Last spring he built two, one of them in a circular tin about 8 inches in diameter and 2 inches high. This tin was used for seed and is fixed to the top of a 4-foot drainpipe with a hood over it against rain.

After some weeks of waiting, a Brown-eared Bulbul decided that it was her’s for the taking and took possession. She laid three eggs of a beautiful mottled strawberry tint, which were inspected daily by the Orange-head. He would stand on the edge of the tin, and look at the



little hen with his head cocked on one side with an expression of astonishment which clearly indicated "well I'm hanged!". She would look back at him and chatter in a most friendly way.

After nearly three weeks she gave up trying to hatch infertile eggs, to my disappointment and that of her spouse. A Red-vented Bulbul immediately took over the nest and added one solitary egg to the clutch. The Orange-head took no interest whatever in her or her doings, even when, in due course, the chick was hatched.

For no particular reason this baby was called "Georgie" and now George or Georgina whichever sex it is, is flying strong and full grown with its parents, and three other brothers and sisters of the previous year's hatch. The year before that the old pair had two young ones, both of which they killed, as soon as they were full grown, which all goes to show how sweet they are.

With regard to curious friendships, a pair of Canary-winged Parrakeets also inhabit this aviary. In the spring I introduced a Golden-crowned Conure cock. Immediately the hen Canary-wing left her husband, and became the inseparable companion of the Conure, who likewise is devoted to her. The Canary-wing is very tame and flies to my shoulder as soon as I enter the aviary. The Conure eventually overcame his fear and now sits on the other shoulder, but is off at the smallest sign of intimacy on my part. I have to keep an eye on him, as he would like to bite my ear hard, and has done so once or twice. No doubt he thinks he is getting his own back for past grievances.

Unexpected things happen in aviculture, as we all know. The most interesting in my experience happened last summer and concerned a pair of Cockatiels. These birds had a second nest. The eggs were about to hatch when the hen became ill and died. In the aviary with the parents were four young Cockatiels from the first nest, which they had left about six weeks before.

I was lamenting the loss of the hen, and had just removed her warm corpse from the corner into which she had fallen, when to my astonishment one of her daughters, showing concern, flew to the nest and inspected the contents. She did this several times and within half an hour was in the box sitting on the four eggs, all of which she hatched in the next few days and brought up successfully.

Although I watched carefully, I could never decide if any of the other children helped to feed their younger brothers and sisters. I think not, judging by their bibs, which were always clean whereas the little foster-mother became wet-bibbed and bedraggled.

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## NOTES ON A SMALL COLLECTION

By FRANCES E. MATTHEWS (Cranleigh, Surrey, England)

I have been asked to give a few particulars about my foreign birds. Some years ago they were housed in aviaries, and then there was much more of interest to tell about them. Owing to the changeable seasons, the birds now in great request are the species which can stand up to all rapid changes of temperature. The birds I have now are all indoors in a large room. This gets all the sun and the windows can open without draught.

I have Violet-ears, Red-headed Gouldians, Cordon Bleus, and Zebra Finches—all in large cages.

The pair of Violet-ears have been very busy making their nest. They are very tame. The nest is made from plaited rushes. It is cone-like in shape and now it is filled with grass. I find these birds very attractive. They never quarrel! Both birds can sing before it is daylight! The cock's note is like that of the Reed Warbler. The hen in her nest joins in "to cheer him up"!

Presently the cock calls her out for their morning drill. This consists of a very graceful type of flying—in which each bird takes part—each bird rising and bending as they fly across the cage. But they time it so that they never touch. I think this exercise is unique and interesting.

The Gouldians, two pairs, are not as energetic as the Violet-ears. One pair inhabits an indoor aviary, on the lines of the one illustrated in Mr. D. H. Risdon's book, which I think is very good. The birds enjoy ample space and sunshine. They have a good box nest which they are preparing. In the same enclosure are a small pair of Cordon Bleus in a rush nest at the other end. The four birds get on well, though the Cordons are not allowed to know which nest they may be allowed to occupy!

Last year, in another place, the Cordon hen laid two eggs but they were not hatched as the birds were disturbed. The second pair of Gouldians, though they have filled their large nest-box with grass, don't seem anxious to nest. Two pairs of Zebra Finches, in separate cages, spend their time talking and making a lot of noise, filling their nest with grass and removing it. It delights them to make a noise. They can do this when they make a root of grass really hard and then drop it. If the hen lays eggs she disregards them. The cock thinks otherwise.

Now I must tell you about Julie, our African Grey Parrot. She lives by herself, and is very strong and not afraid of cold. Her voice can be heard very early, when she hears my daughter moving about. Polly lets her know she is alive. She is told she is "making too much noise and must wait". Her loneliness must find expression, however, and her want to be uncovered is attended to. The seed first, then the bread



and butter, with marmalade, arrive and Julie's remark is "Whoo!". She knows my step and connects it with one or two grapes.

My daughter speaks to me in my room (Polly's hearing is very good) so she joins in the conversation, and says "Yes mother"!

She does not talk when she comes to my room and climbs up on my knee to be stroked, but it is difficult to persuade her to go back to her cage. I think one of her best remarks was when told that "The gardener might be late coming to clean her cage". Julie said, "What a shame!".

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## OBITUARY

G. E. LODGE

By the death, at the ripe age of 93, of George Edward Lodge, the world has lost one of the greatest bird artists of all times, for his paintings of birds and of their natural surroundings were not excelled by any.

Lodge was perhaps primarily interested in the birds of prey, of which he was an authority, and his pictures of these are amongst his best known. He had, in his younger days, done a great deal of falconry and the falcons were his great favourites, though the game birds ran them closely. He dearly loved the Highlands, and his pictures of grouse and ptarmigan, with perhaps a falcon attacking them, are amongst his finest works. When he took a holiday it was generally to visit his Scottish friends who were always glad to have him in their shooting or stalking parties, for he was an excellent shot. But his travels were not confined to the British Isles; he had visited the United States, West Indies and Scandinavia in his studies of birds and beasts.

As well as being an artist, Lodge was a very keen naturalist, and it was always a delight to talk with him on birds and other British creatures, for he knew them all and had studied their minutest habits. I have known him well for the past half century, our first meetings being at the Ornithologists' Club, when those early meetings were held in Frascati's Restaurant in Oxford Street. I have talked with him and admired his work in his studio in South Kensington, where a lot of his pictures were made, and later when he had retired to Camberley. Well do I remember (it must be close on fifty years ago) when the Zoo had acquired a fine Lesser Bird of Paradise which was housed in the old Insect House on the north bank of the canal. Few had, up to that time, seen the full display of this species, but we heard that this bird was beginning to show off in the early mornings. Ogilvie Grant, of the British Museum, was anxious that Lodge should make sketches of the display, so Grant, Lodge, and myself arranged to meet





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G. E. LODGE

[Illustrated







there at eight o'clock on a given morning. It was a bright morning, perhaps too bright for the bird's liking, for he refused to display, though Lodge was able to obtain sketches of various attitudes.

Lodge's pictures have been reproduced in most of the best ornithological books of the last half century or more, and they are particularly pleasing as being both excellent drawings of the birds themselves and beautiful pictures of their surroundings, whether woodlands, lakes, or mountains. His latest work, only completed shortly before his death, has been the illustration of David Bannerman's *Birds of the British Isles*, a colossal undertaking for which he painted no less than 435 species comprised in 377 plates. These depict not only the well-known species, but the occasional immigrants that have obtained a place on the British List. He only wrote one book himself, *Memoirs of an Artist Naturalist*, an excellent book containing a number of his pictures, both in colour and monochrome, though the reproduction in some cases is not quite up to the mark.

When I saw him last in his house in Camberley he had grown a beard which well suited his handsome face. He had practically lost the sight of one eye, but could still paint as well as ever, though he told me that it took him much longer than formerly, and to put in a bird's eye which formerly took but a few minutes, now took the best part of half an hour.

His house was quite a museum as well as a gallery of pictures, wings, tails, and skeletons of birds to show the arrangement of the feathers, the joints, and so on, for as he said, the bird artist has to know precisely how every feather lies and the exact position of every joint. He was also a skilled taxidermist.

George Lodge was a younger son of Canon Samuel Lodge, Rector of Scrivelsby, in Lincolnshire, and cousin of the late Sir Oliver Lodge. He never married, his sister keeping house for him until a few years ago, when she died. Archibald Thorburn, that other great bird artist, who died several years ago, was one of Lodge's great friends. Now both are gone, the last of the Old School of Bird Painters. Will the younger generation produce any quite so good?

D. S-S.

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## BREEDING OF THE CAPE ROBIN

By J. M. SPENCE (Cape Town, S. Africa)

On 9th February I was given a Cape Robin (*Caffrornis caffra caffra*). I have had them many times before, but had never succeeded in keeping them very long as we are unable to get prepared food for softbills, and no one could tell me much about them. To cut a long story short I tried him on egg and biscuit (one mashed egg to two biscuits) ; it worked and he thrived on it and gradually I enlarged his diet (boiled potato, fish meal, bread and milk, grated carrot and cheese). The general colour of the bird is dark grey with a rusty-coloured breast and tail and it has a white eye-strip. The most attractive thing about these birds is that they are forever flicking their tails, to show the two dark feathers in the middle. They are mainly terrestrial in habits although they spend much of their time in low bushes searching for insects.

On 21st February I turned my bird into one of my aviaries, 18 feet by 11 feet by 8 feet high, containing about sixty other birds of various kinds, including some Sunbirds.

I obtained a hen on 22nd February. She was meated-off in the birdroom for a week and then turned into the aviary with the cock. This pair got along quite agreeably as long as the hen kept a respectful distance, but at times he would chase her round quite unmercifully. I have, incidentally, had cocks which would tolerate neither cocks nor hens and if the bird was not removed in time a particularly horrible death was liable to follow.

I got another pair on 12th April and turned them into a smaller aviary, 10 feet by 6 feet by 8 feet high. This pair as it happened got on very well together. They were housed with a pair of Cape Bulbuls and three Bokmakieries (*Telophorus zeylonus zeylonus*). There was no trouble and all went well until the 22nd April when one of the hens died quite suddenly, but I was given another on 19th May.

As the summer got closer the cocks started to show signs of wanting to mate, and on 13th August the cock in the big aviary suddenly grabbed the hen and before anything could be done she was dead with a broken neck.

On 29th September the cock in the smaller aviary was noticed to be having trouble with his eyes. He was caught up and treated with bicarbonate of soda solution and Vaseline E.T.C., but of no avail ; he died on 5th October.

I then introduced the remaining cock to the hen and on 26th October I suspected them to be nesting, as I could only see one of them at a time, so they were left severely alone.

After a few days I noticed that the bread and milk was disappearing



faster than usual. They had the same diet previously described, and no live food whatsoever because I was afraid a sudden change of diet might affect them adversely.

On Thursday, 12th November, I saw a youngster running amongst the long grass in the aviary, and on the 13th I found it dead near the door.

Then on Sunday the 15th when I opened the door to feed the birds there on a perch straight in front of me was a second youngster, this time very far advanced, in fact so much so that before I knew what had happened it flew past me into the garden. I managed to catch it again and it was returned to its aviary within an hour. On the Monday evening I had to remove the cock because he was constantly chasing the youngster round and round the aviary.

The youngster was somewhat smaller than its parents, and the body was grey-brown, streaked with black. The tail was the exact copy of its parents except that it was shorter.

On 27th November the hen had sore eyes, so I put her into the birdroom and tried to cure her eyes but of no avail; she died on 13th December. Incidentally, this eye disease is a queer thing, the lids of the eye go hard with some secretion from the eyeball. It looks very much like pus from a festered sore, so that when the eye is closed the bird is unable to open it and also when opened it is unable to close it. When, and if, you are able to stop the secretion of the fluid by constantly washing with bicarbonate of soda and boracic solution then the feathers round the eyes and beak start to come away, until finally the eyes start watering again and the bird just wastes away. I have been unable to cure this disease and would be glad to hear if any fellow members have come across the same thing, or could recommend some cure, or better still some preventive. At the time of writing I am battling to save the two remaining Robins from the same horrible and slow death. I have managed to stop the eyes secreting the liquid by using a powerful solution of boracic acid powder.

I am sorry that I am unable to give more detail as to the colour, size, and shape of the eggs, period of incubation, growth and feeding of the offspring but as I say I was loth to interfere with their nesting activities in any way in case they deserted the nest.

The only thing I was able to get any information on was the nest: it was (internal measurements) three inches in diameter and one and a half to two inches deep, and constructed of rootlets, coir, feathers, and hair in the form of a cup. The nest was well placed as far as protection from the weather was concerned because it was placed under a tuft of long grass which in turn was under a *Pittosporum* tree about four feet high.

As far as I can deduce from studying their nesting habits in the wild



the incubation period is from twelve to fourteen days, and the youngsters are flying at 15 to 18 days from the date of hatching.

*Additional Note.*—Since I wrote this article the cock Robin has also died which leaves me with the youngster.

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## MR. RUDKIN, SR., CARRIES ON AT 92 !

By CARL NAETHER (Sherman Oaks, Calif., U.S.A.)

One of California's ablest and most successful aviculturists, Francis H. Rudkin, Sr., is to-day making active plans for the 1954 breeding season. Though 92 years old, this indefatigable birdlover is remodelling some of his aviaries at his cosy citrus ranch in Fillmore, California, for more convenient and effective birdkeeping.

Almost ever since the year 1912, when the Rudkin family forsook their homeland, England, to build a new home and a new life among strange surroundings and people in California, birds of various kinds have been in the minds and hearts of both Mr. and Mrs. Rudkin, Sr. Their special attention for years has been devoted to the breeding of parrot-like birds, in which phase of aviculture they have been eminently successful.

Since the passing of his wife, Mr. Rudkin, Sr. has carried on his great hobby with double devotion. Perhaps the most fruitful results of his labours in the field of aviculture are not the raising of many and often rare parrot-like birds in the numerous aviaries he keeps going year in and year out, but the encouragement, the inspiration, and the helpful advice he has been giving all these many years to the visitors who almost daily throng his home-place to view his birds and to catch some of this great man's enthusiasm for his feathered friends. Unquestionably, Francis H. Rudkin, Sr., has the satisfaction of having been responsible for starting many men and women on the long road to successful birdkeeping. Always genial, always eager to help solve a bird problem, he has given unstintingly of his time and effort every day in the year, including Sunday, to furthering the most constructive and wholesome interests of aviculture. Not only grown-ups have thus benefited from association with this eminent bird fancier, but youngsters of all ages, brought by their elders or teachers in small and large groups to view the Rudkin bird collection, have been thrilled by the colourful display of so many and so varied species of parrots, cockatoos, cockatiels, parrakeets, lovebirds, and other showy feathered creatures. And all of them, youngsters as well as grown-ups, have taken away with them not only the memory of beautiful birds, happy in their spacious surroundings, but of a man's loyal devotion to their everyday welfare and their happiness. Though Francis H. Rudkin, Sr., keeps hundreds of birds, as he takes his visitors



from aviary to aviary, he spiritedly relates stories of what this bird or that bird has done, or has not done, thus keeping his visitors on the alert during every joyous moment of their visit. If he had made written note of the innumerable questions he has been asked about the care and breeding of parrotlike birds—and has valiantly endeavoured to answer fully and satisfactorily—they would indeed fill a very sizeable volume.

This modest tribute to a great and venerable aviculturist is written in the hope that it will in some measure inspire other birdlovers to follow his fine example. It is one thing to keep birds for one's very own pleasure and self-satisfaction ; it is quite another thing to ride one's hobby successfully and at the same time share its successes and its joys with like-minded men and women, not only in one's immediate neighbourhood, not only in one's state or even country, but even abroad—as Mr. Rudkin has demonstrated for so many years to so many people.

In closing, I am confident that the members of the Avicultural Societies of England and of America will join me in wishing Francis H. Rudkin, Sr., many more years of continued personal well-being, and of continued enjoyment of his beloved birds.

\* \* \*

## A NEW BUILDING FOR BIRD AND PLANT EXHIBITION

By ROLAND W. HAWKINS (Pittsburgh, Penn., U.S.A.)

Down through the ages mankind has derived endless hours of pleasure from keeping birds as pets. Some species are valued for their songs or ability to mimic the human voice, and others for their beautiful plumage. To-day there are many bird fanciers whose entire enthusiasm and interest in birds is directed towards breeding certain species to obtain purer strains and specific colour patterns. The methods of keeping birds has unfortunately shown little imagination and the conventional types of cages constructed of wood or metal having either screen, wire, or glass sides does little to promote the happiness of its inmates. Of all the animal kingdom, birds, due to their powers of flight, are perhaps the most freedom-loving creatures on the face of the earth. To capture and confine them within the cages as we know them to-day produces results that are all too apparent in the birds' condition. Certain species that have been domesticated by man, such as the canary, thrive and appear perfectly happy within the confines of a small cage. A great many of the larger public and private aviaries where collections of local and foreign birds are housed, consist of row after row of cages containing nothing more than perches, food,



and water vessels. Regardless of how well the birds are cared for, they cannot reflect happiness in such an environment, for it is nothing more than a jail bearing with it a sentence for life-time solitary confinement. In recent years there has been a decided trend towards larger flight cages containing running water and some plant life. This is a highly commendable improvement as the birds have more area to exercise and do not feel so badly shut in.

In keeping with the progressive march of the City of Pittsburgh is the new Conservatory-Aviary located in West Park on the city's North Side. Here is a success story of a building unique in design and principle, where the method of exhibiting birds in captivity has entered upon a new era that makes the old-fashioned cage methods seem completely antiquated.

In two large glass-domed conservatory rooms constructed of steel and aluminium, tropical birds and plants thrive in complete harmony. Without the intervention of physical barriers of screen, wire, or glass, visitors are permitted to walk in the rooms with the birds and plants, to see and study them in a natural environment. The many species of lush tropical plants, including bamboo, rubber trees, avocado, papaya, coffee, mango, and various palms, etc., along with a myriad of interesting smaller plants sets the stage for the many species of tropical birds selected for their beauty, character, and song. A running stream, complete with cascading waterfalls and pools, adds natural beauty as well as providing a home for numerous species of fish, aquatic freshwater animals and water plants. It does not require an experienced eye to see that the birds are completely happy in this environment, a condition easy to judge through their actions and appearance. Sleek in their full plumage they are active bright-eyed birds reflecting their boundless energy and health with their songs and calls, echoing and re-echoing throughout the rooms. Where the species are represented by both male and female birds, breeding and nesting activities have been carried out successfully within the rooms. When birds mate, build nests, and rear young it seems right to assume they are not feeling remorseful at being held in confinement.

The overwhelming success of this new combination Conservatory-Aviary will undoubtedly stimulate interest in vivariums throughout the world. Now it has been conclusively proved that birds, plants, flowers, and fish will all thrive and propagate themselves under the same glass roof, aviaries and conservatories can unite and present a continuous cultural showplace of far-reaching educational values to young and old alike.

There were a few sceptical critics who believed a venture of this type would be doomed to failure from the beginning, their reasoning being that the birds would destroy the plant life and mess up the exhibit areas to such an extent it would become unsightly. The rule of success





Copyright [illegible]

[Harold Corsini]

SIXTY BIRDS REPRESENTING TWENTY-EIGHT SPECIES, AND FIFTEEN  
FAMILIES MAKE THEIR HOME IN THIS CONSERVATORY ROOM

[To face p. 70.]





*To face p. 71.]*

*Copyright]*

*[Harold Corsini*

*THERE ARE NO BARRIERS BETWEEN THE VISITORS AND THE BIRDS.*



governing this problem was through the control of population, both as to numbers and to species. Birds known for their destructive tendencies towards succulent plants were either omitted from the rooms entirely, or represented by a few individuals. By controlling the population in this way, plant destruction is of no significance. Once established the plant life grows so profusely it has to be cut back from time to time, otherwise it would completely take over the rooms. Insect pests pose a more serious problem as poisonous insecticides cannot be used, being fatally disastrous to the birds. The insectivorous birds keep the plants clean of mealy bugs and aphid, but the scale insects have to be controlled manually. The foliage is kept clean by the morning and afternoon syringing of the plants and any bird droppings that may have spotted the leaves washes off readily.

With no need for far-reaching vision it is now possible to predict the progress of new aviaries in the future. Large conservatory-type structures will be built and planned along ecological lines by scientists representing all the fields of our natural sciences. Together they will be able to plan authentic ecological controlled rooms, of the various life zones, complete with the dominant plants and birds endemic of the different areas chosen. These displays will undoubtedly take the place of existing bird and plant exhibits as we know them in our zoological gardens, aviaries, and museums of to-day. In such buildings, where birds and plants can be kept under continuous surveillance, ecological studies of their inter-relationship will advance rapidly. The educational and scientific prospects for such buildings will have tremendous influence on the studies of natural history in the future.

Few people have an opportunity during their lifetime to visit tropical countries, where in their leisure hours, they can make trips into remote areas to observe and study the flora and fauna. With such buildings as the Conservatory-Aviary within the limits of our modern cities, many of the most interesting exotic birds and plants can be studied in comparative comfort, without being subjected to the rigours of tropical exploration. Jungle entanglements, biting insects, poisonous snakes, are far away when one enjoys the thrill of watching a flame-coloured "Cock of the Rock" fly from tree to tree in the new Conservatory-Aviary. Toucans with their large colourful bills, the piercing calls of the Naked-throated Bell Birds, the pendulum tail movements of the Motmot, the cordial greeting of the Javan Hill Mynah are but a few of the many interesting and colourful tropical birds you will encounter. Many visitors are thrilled to see how bananas grow while others are amazed at the phenomenal growth rate of the bamboo shoots, growing twelve inches a day. Flora and fauna, the combination of the two makes an impressive exhibition.

Although many of us have dreamed of such a place the credit for seeing these dreams realized belongs to Mr. Howard B. Stewart,



Director of Parks and Recreation ; Frank Curto, Horticulturist in charge of Conservatories and Gardens ; Arthur R. McLennan, Superintendent, Bureau of Administration. Their far-reaching vision has advanced methods of bird and plant exhibition to a new and higher plane.

Since the doors of the building opened on 10th August, 1952, many thousands of visitors have acclaimed and voiced their enthusiasm for this new type of exhibit. Students in nature and biology classes, Nature photographers, artists, young and old alike, from all walks of life can spend many enjoyable and instructive hours in the new Conservatory-Aviary.

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## MEMORIAL TO THE DUKE OF BEDFORD

In response to numerous requests it has been decided to launch an appeal for funds for a Memorial to the late Duke of Bedford. The memorial will take the form of an aviary to be erected in the Zoological Gardens at Regent's Park, London, where the Zoological Society will maintain a collection of homing Budgerigars at semi-liberty. In addition, it is proposed to provide a Challenge Cup to be known as the "Duke of Bedford Memorial Trophy" for the best Parrot-like bird, to be competed for annually at the National Cage Bird Exhibition. The appeal committee consists of Mr. Alfred Ezra, President of the Avicultural Society, Miss E. Maud Knobel, Messrs. E. J. Boosey, B. H. Dulanty, S. Porter, A. A. Prestwich, D. Seth-Smith, J. J. Yealland, and R. C. J. Sawyer (Hon. Treasurer).

The Council of the Avicultural Society have decided to give the appeal every support, and it is hoped members of the Society will send donations, however small, to the fund for a Memorial to this great aviculturist, to whom aviculture in general and the Society in particular, owe so much.

Cheques, postal orders, etc., should be sent to :—

The Hon. Treasurer,  
The Duke of Bedford Memorial Fund,  
c/o Zoological Society of London,  
Regent's Park,  
London, N.W. 1.

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## THE SOCIETY'S MEDAL

The Council has awarded the Society's Medal to A. A. Prestwich, for breeding the Lineolated Parrakeet (*Bolborhynchus lineola lineola*).

\* \* \*

## BRITISH AVICULTURISTS' CLUB

The forty-second meeting of the Club was held at the Rembrandt Hotel, Thurloe Place, South Kensington, S.W. 7, on Wednesday, 10th March, 1954, following a dinner at 7 p.m.

Chairman : D. Seth-Smith.

Members of the Club : Mrs. J. R. Alderson, Miss P. Barclay-Smith, B. Benedict, Miss K. Bonner, Captain A. A. Clarence, G. T. Clark, Mrs. G. T. Clark, W. D. Cummings, A. H. D'Aeth, J. O. D'eath, B. H. Dulanty, O. E. Dunmore, A. Ezra, Miss S. A. Fothergill, H. J. Harman, R. E. Heath, Dr. E. Hindle, G. T. Iles, Miss M. H. Knobel-Harman, Dr. F. B. Lake, G. C. Lynch, P. H. Maxwell, G. S. Mottershead, S. Murray, S. Porter, A. A. Prestwich, J. H. Reay, D. H. S. Risdon, R. C. J. Sawyer, A. E. Sibley, E. H. Tong, E. N. T. Vane, N. S. Walker, C. H. Wastell, H. Wilmot, H. Wallace Wood, J. J. Yealland.

Guests : Dr. K. Aylwin-Gibson, J. Bailey, Miss E. V. Baxter, Mrs. Carson-Roberts, S. A. Croucher, Miss H. Gentry, Mrs. B. H. Claeson Gordon, M. L. Jones, Mrs. F. B. Lake, H. M. Luther, Sir Philip Manson-Bahr, Lady Manson-Bahr, Mrs. H. Maurice, Mrs. S. Murray, Mrs. J. H. Reay, Mrs. D. Seth-Smith, Mrs. E. H. Tong, Mrs. C. H. Wastell, Miss M. White, Mrs. H. Wilmot, W. A. Wood, A. N. Other.

Members of the Club, 38 ; guests, 22 ; total, 60.

Sir Philip Manson-Bahr showed slides and paintings to illustrate "Some Fijian Birds in Captivity." Sir Philip first visited the Fiji Islands in 1910, and during a stay of fifteen months had considerable experience in keeping some of the native birds. Several species were successfully brought home to England ; amongst which the Ruffed Lory, the Taviuni Parrakeet, and Peale's Parrot Finch were the first brought alive to this country. Sir Philip again visited the Islands in 1950, and described the vast changes since his previous visit. Due to the depredations of the introduced mongoose some species were now on the point of extinction, others had changed their nesting habits.

The audience signified by its sustained applause that it had greatly appreciated Sir Philip's graphic account.

ARTHUR A. PRESTWICH,  
Hon. Secretary.



## REVIEW

BIRD-RINGING. The Art of Bird Study by Individual Marking.

By R. M. LOCKLEY and ROSEMARY RUSSELL. Messrs. Crosby Lockwood and Son, Ltd., London. 1953. Price 9d. 6d. net.

This is an attractively presented little book, and contains chapters on "The History of Bird Ringing", "The Value of Bird Ringing", "The Technique of Bird Ringing", "Trapping Birds and Rings", and "Records and Field Equipment". It is written in an interesting and readable style, but it is unfortunate that the authors have not been more careful in checking their dates and other precise information. On page 6, for instance, the establishment of the Royal Hungarian Central Bureau for Ornithology is given as 1903, whereas this should have been 1908, and the date of the establishment of the Heligoland station as 1904 instead of 1909. Further, on the same page, reference is made to work done in Spain which is no doubt a mistake for work done in Portugal, and a distinguished Civil Servant is designated "Professor", a title he has never possessed.

Moreover, it is rather surprising that though the authors acknowledge the "bibliographical assistance" given by Dr. W. Rydzewski, no acknowledgment is made to the extracts which have been taken from that author's paper "A historical review of bird marking" (*Dansk Ornithologisk Forenings Tidsskrift*, May, 1951), which are given in the first chapter.

P. B-S.

\* \* \*

## NOTES

## CORRIGENDUM

Page 32, line 27. For "Green-winged Malkoha" read "Green-billed Malkoha".

## THE ST. THOMAS CONURE

During the time the parrot ban was suspended many Conures with orange-yellow cheeks and orange circles round the eyes were imported. For reasons best-known to themselves the "trade" sold them as St. Thomas's Conures. Strangely, none appears to have questioned this name, although even a moment's thought would have made it obvious that this was very probably a misnomer—it being most unlikely that so many Conures could have come from an island the small size (32 square miles) of St. Thomas, one of the Virgin Islands.

While in England during the summer, Dr. Lendon saw specimens at the London Zoo, "*Darenth-Hulme*," and elsewhere, and immediately expressed his disagreement with the identification. The Doctor gave it as his opinion that this so-called "St. Thomas's" was really the Yellow-cheeked Conure, *Aratinga pertinax chrysophrys*, of British Guiana, Surinam, and Cayenne: this identification has since been confirmed by reference to the skins at the British Museum (Natural History).

Dr. Lendon informs me that when on a recent visit to the Brookfield Zoo, Chicago, he saw a real St. Thomas Conure (*A. p. pertinax*). According to Karl Plath this bird, the survivor of four, is considered really rare.

Other vernacular names for *A. p. chrysophrys* are Golden-eyebrowed and Guiana Brown-throated Conure.

A. A. P.



## SUSCEPTIBILITY OF MOUSTACHE PARRAKEETS TO PNEUMONIA

Further experience with the Moustache Parrakeet tends to confirm their susceptibility to pneumonia as discussed by Mr. Buckingham-Jones.

My birds were kept in unheated outdoor flights all the year round and appeared to be perfectly fit and happy at all times. They were not shut in at night, but I was always somewhat concerned for them in very cold weather as all *Psittacula* are vulnerable to frostbitten feet. I am afraid that at that time I felt it worth risking a loss as they were readily replaceable whilst the ban was raised on Parrot importation.

In the autumn, however, three birds were lost in cold, wet, changeable weather. The first was a hen found dead on the floor of the flight, but as a considerable disturbance had been heard during the night with owls, it was assumed that this was a result and no post-mortem was made. The second and third were both cocks and had precisely the same symptoms and result. Neither bird was thought to be ill but just doubtful about nine o'clock in the morning, they were both watched almost continuously for a couple of hours when it was decided to bring them in as a precaution. One bird sat on the perch all day, ate nothing, looked better late at night, and was dead early the next morning. The other bird seemed to collapse whilst his cage was being warmed up and although he was only a doubtful bird when I went for the cage, ten minutes later he was on the floor of the flight in a pretty bad way and died in about four hours.

It would appear, therefore, that these birds are susceptible to pneumonia, but are also extremely resistant to it in displaying any symptoms thus making diagnosis almost impossible. The only remedy would appear to be prevention, as a cure is almost out of the question at so short notice. Pneumonia in birds is almost always incurable. I have tried penicillin, but this is useless if administered orally, it may have a chance if injected into the blood by hypodermic. Recently, however, I have heard of cures being effected with aureomycin on the continent (administered orally), I have also tried it myself on two cases and both have been successfully saved. It must be admitted that the steps were taken on suspicion rather than diagnosis, so that although my birds recovered I cannot guarantee that they ever actually had pneumonia. Perhaps some of our medical members can give further authentic information on these possibilities.

E. N. T. VANE.

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## CORRESPONDENCE

## PRINCESS OF WALES OR QUEEN ALEXANDRA PARRAKEETS

I notice that in his interesting account of the National Show, Mr. Seth-Smith deplores the fact that people will persist in referring to what he prefers to call the Queen Alexandra Parrakeet, as the Princess of Wales Parrakeet, since, as he rightly points out, England has had more than one Princess of Wales, but only one Queen Alexandra.

Unfortunately, however, were his suggestion adopted, and taking into account people's incurable habit of abbreviating names (Budgerigar . . . Budgie . . . Budge !), I am afraid it would be no time at all before the Queen Alexandra Parrakeet became simply the Alexandra Parrakeet.

This, in turn, would lead to endless confusion between the Alexandra Parrakeet and the much commoner Alexandrine Parrakeet, and one can well imagine the acrimonious correspondence that would ensue if somebody—possibly in all innocence—sold one of the latter as one of the former !

I have sometimes heard Princess of Wales Parrakeets referred to as Princess Parrakeets, but this does not matter so much, as there is no other Princess Parrakeet, nor any with a name at all resembling it.

E. J. BOOSEY.

BRAMBLETYE,  
KESTON, KENT.



Mr. Seth-Smith, in his National Show report, says : " I wish they would not persist in calling this bird the ' Princess of Wales Parrakeet '."

To be logical and correct one must call a bird by the name originally given to it. This bird was named in 1862 and was therefore known by no other name until this lady became Queen some forty years later. The fact that the title persists as the most commonly used name for this bird to-day speaks for itself.

Surely it is not suggested that every time a title of address is altered for an individual, the name given to anything as a mark of respect to that individual must also be changed in scientific records. Otherwise we should now have to call the Stanley Parrakeet the Derbyan, since it was named after the Earl of Derby who was then Stanley, and what would happen to the other Derbyan Parrakeet. The Mrs. Johnstone Lorikeet might have to become an entirely different bird if that lady had happened to re-marry. A newly discovered species might be called the Cornwall Parrakeet, later on this might be changed to the Prince of Wales Parrakeet, and even still later to the King Charles Parrakeet. Let us be reasonable and stick to the most popular and proper name, " Princess of Wales," in any case the scientific record retains the essential dedication "*alexandriae*".

E. N. T. VANE.

FAIRACRE,  
BALLINGER,  
GREAT MISSENDEN, BUCKS.

#### BREEDING OF RED-BELLIED CONURES (*Pyrrhura vittata*)

I am requested by Sir Edward Hallstrom to inform you that the birds he bred were Red-bellied Conures (*Pyrrhura vittata*) as described on page 133 of *Parrots and Parrot-like Birds*, by the Marquess of Tavistock.

The following notes, as dictated by Sir Edward on 8th February, 1954, no doubt will be of interest to you and the Society members :—

These Conures were bred in an aviary approximately 3 feet wide, 6 feet high, and 16 feet long, with one end covered, back, sides, and top, for about 3 feet, and a cover over the front of the aviary for about 3 feet to protect the food and water containers. The nest used was an upright one of the grandfather clock type. Three eggs were laid but only one chick was reared and this is now about twelve months old.

You may also be interested to know that during the last twelve months Sir Edward has bred the following : 2 Musschenbroek's Parrots, 1 Double-eyed Dwarf Parrot, 8 Eclectus, 1 Alexandrine × Indian-Ringneck hybrid, 10 Hooded × Many-coloured hybrids, 6 Hooded Parrots, 1 Lesser Sulphur-crested Cockatoo, 1 Blue-eyed Cockatoo (New Britain), 60 to 70 African Lovebirds, such as the Peach-faced, Masked, Black-cheeked, Fischers, as well as quite a number of lutino Nyassas, and in addition to these, of course, Sir Edward has bred quite a number of the commoner species such as Rosellas, Pennants, Scarlet-chested, Turquoisines, Red-collared Lorikeets, etc.

Many of the young cock Hooded-Many-coloured hybrids are almost identical with the Paradise Parrakeet, but unfortunately there has only been one female, which is at present mated to an unrelated cock bird, and it will be very interesting to see the results—if any.

The African Grey Parrots have had chicks and have reared them almost to maturity. These birds nested in a vertical hollow log about 2 ft. 6 in. down from the top, with wire netting on the side to enable the birds to get down easily, but it would almost appear that the birds had jumped down on the young birds and killed them.

The Lesser Sulphur-crested Cockatoos also damaged the wing of one of their youngsters by jumping on them, but all nests are now on a slope to ensure that the birds walk down and do not jump down on the youngsters.

At the present time there is a Yellow-tailed Black Cockatoo sitting on an egg and Sir Edward hopes that the young bird will appear within the next few days.

The Blue-eyed New Britain Cockatoos have bred in a heavy box-type nest and have only had one chick at a time, although two eggs were laid on several occasions. It was noted that the male sat on the egg most of the time, but occasionally both birds were in the nest, but on the majority of occasions the hen was the only one seen flying in the aviary.



The Musschenbroek's and Double-eyed Dwarf Parrots were most difficult to rear. Although the Musschenbroek's, when first caught, is a seed-eater, it cannot rear the youngsters on seed, and after losing several young birds I drove nails into the perches nearest the door, and every morning pushed an apple on to each nail, and the birds were thus able to feed their young ones with soft food. It was also impossible to encourage the Musschenbroek's to go to the floor of the aviary for water, and as a result the water was put on the same level as the food—about 5 feet from the ground. Many young Double-eyed Dwarf Parrots were hatched and lost before I was able to give them food on which they could rear their young. Millet or Pannicum seed that had been boiled with figs and syrup solved the problem. This also created another problem—ants. Although I have about 10 pairs of Double-eyed Dwarf Parrots the food difficulty is such that I have only two pairs set up for breeding. Double-eyed Dwarf Parrots will eat apples the same as described for the Musschenbroek's, and they will also eat canary and sunflower seed, but destroy many more kernels than they eat.

At the moment there are two pairs of Macaws on eggs. The Blue and Yellow and the Red and Yellow. The Red and Yellow have reared five youngsters this year, but the Blue and Yellow have not yet been successful in rearing their youngsters.

About February each year for the last two years the Hyacinthine Macaws have gone to nest, and have been observed mating. The eggs appear to have been fertile, but neither clutch has hatched. A pair of young Hyacinthine Macaws are very interested in one another and spend a considerable amount of time in the nest.

At the moment a pair of Blue and Yellow Macaws have three babies, whilst a pair of Red and Yellow are sitting on eggs.

WALTER H. TURNER.

462-4 WILLOUGHBY ROAD,  
WILLOUGHBY,  
SYDNEY, AUSTRALIA.

#### BREEDING RESULTS FOR 1953 AT HILLINGDON

Regarding breeding results for 1953, three pairs of Plumheads laid sixteen eggs between them; unfortunately these were all spoilt at various times during incubation by cats getting on top of the flights and disturbing the hens. Bourkes reared five very nice young and Cockatiels reared four; in the case of Many-colours, seven eggs were laid but no attempt was made to incubate. Elegants had two clutches of five eggs, both being infertile, likewise the Princess of Wales had eight eggs, found to be infertile after sitting the full time. A yellow Redrump also had four eggs but was disturbed whilst sitting. Stanleys, Barrabands, and Rock Peplars all spent a great deal of time in their nest-boxes but did not lay.

Good fortune, however, was registered by having a brood of three Painted Finches reared; all turned out cocks, a second pair nested and laid two clutches of five eggs but made no attempt to sit. One pair of Gouldians, Black-headed cock and Red-headed hen, nested, reared two very fine youngsters and carried on in the same nest without a break, producing two more; eight clear eggs were found when clearing out their nest-box; incidentally, this pair have gone to nest again and have youngsters. Three other pairs did precisely nothing towards increasing the Gouldian population.

So much for 1953, what of 1954?

As planned, it is up to two pairs of Plumheads, two pairs of Many-colours, two pairs of Bourkes, two pairs of Rock Peplars, a pair of Cockatiels, a pair of Moustache, I hope to emulate friend Vane's success with these attractive and amusing birds. A pair of Princess of Wales and Barrabands, and finally four pairs of Gouldians plus youngsters, and two pairs of Painted Finches; not a terrific collection by some standards but enough to cope with in a limited leisure.

J. H. REAY.

CRANMORE,  
THE CLOSE,  
HILLINGDON, MIDDLESEX.



THE AVICULTURAL SOCIETY RECEIPTS AND PAYMENTS ACCOUNT

Year ended 31st December, 1953.

RECEIPTS				PAYMENTS			
	£	s.	d.		£	s.	d.
To Balance at Bank, 1st January, 1953				By Printing of Magazine		890	8 3
" Ordinary subscriptions				" Coloured plates		171	1 4 6
Arrears		39	12 3	" Authors' separates		9	2 7 5
Current		698	5 2	" Sundry printing and stationery		64	7 14 4
In advance		115	15 0	" Printer's charges and expenses		7	14 0 0
				" Honorarium to Editor		100	0 0 0
Life membership subscriptions				" Secretarial		52	0 0 0
Avicultural Society of America				" Preparation of Index		10	10 0 0
Balance, 1952		290	13 0	" Newman Library insurance		2	5 0 0
1953		149	0 0	" Roneo filing cabinet		15	8 7 9
				" Advertisements		34	18 0 0
Donations				" Expenses at Council Meetings		3	5 0 0
Sales of Magazines				" Postages		27	17 4 6
Sales of Aviculture				" Bank charges			12 0 0
Sales of Australian Parrots in Captivity				" Miscellaneous expenditure		25	14 4 0
Sales of surplus books				" Purchase of Defence Bonds		600	0 0 0
Sales of waterfowl rings							
Sales, Miscellaneous				" Balance at Bank, 31st December, 1953		2,015	5 4 6
Advertisements						820	16 6 6
Dividends							
						£2,836	1 10

I have examined the above Account with the books and vouchers of the Society and certify it to be in accordance therewith. I have verified the Bank Balance.

LONDON.  
19th February, 1954.

J. WATKIN RICHARDS, } Hon. Auditor.  
Certified Accountant.



## CANDIDATES FOR ELECTION

- B. BELFIELD, Alma House, Dalton, Parbold, Nr. Wigan, Lancs. Proposed by Miss K. Bonner.
- Right Hon. the Viscount CHETWYND, T.D., F.S.A., F.Z.S., Eastbury House, Nr. Newbury, Berks. Proposed by E. J. Boosey.
- W. G. CONWAY, St. Louis Zoological Park, St. Louis 10, Mo., U.S.A. Proposed by Karl Plath.
- T. O. EVANS, 12 Bedford Gardens, Luton, Beds. Proposed by Miss K. Bonner.
- K. R. E. GREWCOCK, 36 Station Road, Marston Green, Nr. Birmingham. Proposed by A. A. Prestwich.
- W. KLÖVEKORN, Pfalzdorferstrasse 61, (22a) Goch-Rhld, Germany, British Zone. Proposed by A. A. Prestwich.
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- Mrs. K. M. MCKEE, 2044 Riverside Avenue, Trail, B.C., Canada. Proposed by Miss K. Bonner.
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# AVICULTURAL MAGAZINE



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GREEN-HEADED OLIVE SUNBIRD.



# AVICULTURAL MAGAZINE

THE JOURNAL OF THE AVICULTURAL SOCIETY  
AND THE AVICULTURAL SOCIETY OF AMERICA

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MAY-JUNE, 1954

## THE GREEN-HEADED OLIVE SUNBIRD

(*Cyanomitra verticalis verticalis*)

By GERALD T. ILES (Belle Vue Zoo, Manchester, England)

The Green-headed Olive Sunbird, or, as it is also known, the Olive-backed Sunbird, is not one of the most brilliantly coloured of the family, but it is quite pleasingly marked and is of special interest because the hen has a cap of metallic green. A detailed description of the birds is hardly necessary in view of Mr. Reid Henry's exquisite plate accompanying this article. I feel I should mention, however, that because of the hen's unusual possession of the metallic cap she was once considered to be a distinct species. Shelley, in his *Monograph of the Nectarinidæ*, shows both sexes with pectoral tufts, the cock's being very pale yellow while the hen's are shown as white. Bannerman, in his *Birds of West Africa*, says that the hen does not possess pectoral tufts, while Jackson, in his *Birds of Kenya and Uganda*, states that in the sub-species *Cyanomitra verticalis viridisplendens* the hen's pectoral tufts are white but not so well developed as in the cock. While the pectoral tufts on our cock bird are visible at all times I am not certain about the hen. She appears to have a few pale yellow feathers at the shoulder tips.

Our pair of Sunbirds were caught by natives in the Kissy coastal area near Freetown, Sierra Leone, for Mr. Kenneth Smith during the early part of 1951, and he brought them to England and subsequently to the Zoo in May of that year. Where they were found this species is fairly common and the birds were seen feeding from flowers on several occasions. Ours were sent to us as a mature and an immature cock, but with the aid of Shelley's *Monograph* I quickly identified them as a true pair. The two birds have always been kept in separate cages, as I have had unhappy experiences with fights. The cock bird is exhibited in the range of Sunbirds in our Hall of Living Jewels, while the hen has always been kept in the Stock Room where she has become quite a pet.

Each evening I feed all the Sunbirds myself, and through doing so



The following is a list of some of the birds that I have kept under mixed conditions, and the general results of such a practice.

Queen Alexandra's. This species is very easy to mix with other birds that are not too aggressive. I have kept pairs of Alexandras with Bourke's, Turquoisines, Elegants, and Scarlets, with perfect results. They will also agree with budgies, single pairs of African *Agapornis* (except Peach-face), and with Cockatiels, Plum-heads, and Javan Parrakeets. In very large pens I would have no hesitancy in mixing them with Kings, Crimson-wings, or small American Parrots as Lineolated, etc.

Barraband's. This is another species that is most charming in mixed company. They will agree with practically all birds, indeed one must be careful not to put them with smaller but more active and aggressive birds, for they are not really capable of protecting themselves. Besides the *Neophema*, they are safe with even some of the larger birds as Indian Rock Parrots. I have not seen them ever become aggressive even to very small birds such as Zebra Finches.

Crimson-wings. Individual pairs differ greatly in disposition. One pair I have will agree with anything I place with them, while a second pair agreed with Barraband's for a while and then the male Crimson-wing became increasingly aggressive, and they were finally separated. With birds of this individual variation it would be best to try them out on a day when the owner is around to watch. A single pair of Red-rumps kept for a short time with a pair of the Crimson-wings proved to be absolutely impossible, for the Red-rumps literally drove the Crimson-wings to distraction, chasing them and making their lives miserable. It has always been my experience that Red-rumps are totally impossible to keep with others birds—regardless of the size of the birds they are to have as "room-mates".

Kings. These rather phlegmatic birds are of a peaceful disposition. They seem to like to sit on a perch alone—and the only time my pair would get upset was when some *Neophema* would fly to the perch the King would be dozing upon. Then, with great effort, the King would walk towards the bird and scold it off that perch to another—and then resume his nap where he had been interrupted. Kings will agree with Indian birds such as Plum-heads and Ring-necks, and related Indian birds. The one difficulty in keeping other birds in with Kings is that a King takes so much space while flying that it not infrequently alarms the other pair of birds. For this reason a steady pair of birds would be the best choice. In very large aviaries Kings are most desirable, for they will not bother anyone, and there is little chance for a quarrel over a nest, for most California Kings delight in dropping their eggs from the perch—or at best in just laying them hither and thither about the aviary.

Rock Peplars. The remarks under the Queen Alexandra and



Barraband's are equally applicable here. Indeed, the Rock is such a lazy bird that it would appear nearly impossible to upset its placid disposition.

*Neophema*. These birds are quite easy to mix in with other species that are not too aggressive. They are clever flyers, and so are not easily frightened by some larger, clumsy bird. They require a small nest-box that can be placed up very close to the roof of the cage, so that there is just enough room for them to perch on top of the nest—and very few of the larger birds will try to inspect more than once the small box required for the Grass Parrots. Their steady habits, once used to the aviary, make them ideal for keeping under mixed conditions.

Rosellas. These birds are extremely difficult to keep in with other birds at any time of the year—and during the spring nearly impossible. Individual pairs differ greatly in their temperament. In a large mixed collection some years ago we had a pair of Red Rosellas that raised young each year, and never bothered the other birds (*Agapornis* and *Neophema*) at any time. In smaller breeding cages I would not try to mix any of the *Platycercus* with anything else during the breeding season. Of the group the Red and the Blue seem to be the most aggressive—even to budgies and Zebras, etc. The Pennant's and the Stanley seem to be a little more amenable to group life—but I have never actually tried them with any other bird. Possibly some other reader could shed additional light on this matter.

Barnard grouping. Like their near allies, the *Platycercus*, all the *Barnardius* are inclined to be bullying and aggressive during the Spring season. For this reason I have never kept adult Barnard's in with other birds. Birds of the year are perfectly safe, though Barnard's work in pairs when it comes to bullying other inmates of an aviary.

*Psephotus*. This group contains some birds that I personally consider absolutely impossible subjects for communal living—and other members that are ideal subjects. The Red-rump I have already commented upon—and I have had Red-rumps (working in pairs) actually murder Zebra Finches, budgies, and Button Quail. The Blue-bonnets are reputed to be very dangerous and aggressive with other birds—though this has not been our experience. In a large mixed collection consisting mostly of odd birds (and the majority males at that), a pair of Blue-bonnets have lived peacefully for over a year. In another cage where a budgie had entered through an error, no attempt was made to murder the budgie. They also appear to be happy with Queen Alexandras and Cockatiels. One thing is sure though—one male Blue-bonnet couldn't be happier than when he is engaged in combat with another of his own species. It is a very poor policy to keep this bird near other Blue-bonnets, for the owner will eventually end up with a number of toeless birds from fights taking place on the wire. Hooded are perfect in every respect and



are never aggressive to other birds. Because the Hooded generally nest at a period in the year when any other bird in its right mind is moulting or resting, there is very little occasion to worry over fights concerning nesting sites. Many-colours are variable in their dispositions. One breeding pair will not tolerate any living thing in their aviary while they are nesting—and even hate and fight the English Sparrows that sometimes alight on their aviary. Another pair is never upset, and though I have not kept birds with this pair during the spring breeding season, the pair were not upset when a year ago a young Bourke got into their aviary when a door accidentally came open. Not wanting to frighten the Many-colours who had young in the nest, I did not catch the Bourke, and he stayed in with the Many-colours for over a month with no bad results.

Asiatic Parrakeets. The only Asiatic psittacines kept in California are the Plum-head, Derbyan, Ring-neck, Alexandrine, and Javan and Moustache. They all seem quite well disposed to company in their aviary, and are not over aggressive. Of the birds mentioned, possibly the most problematical are the Ring-necks. Individual pairs will differ greatly in their behaviour towards other birds—some pairs agreeing and others bullying other birds. I think that the answer here is space—for Ring-necks do agree well in an aviary that is spacious. Moustache and Javan are both peaceful and the large and fierce looking Alexandrine seems the most peaceful of the entire lot. The Derbyan is another bird that does not resent companions—agreeing very well even with budgies. As all the Asiatic Parrakeets nest very early in the year (as compared to the average Australian), there is not much likelihood of any serious disagreement over nesting sites.

African species. Apart from the Senegal Parrot, which seems another perfect aviary inmate, the only commonly kept Africans (here in California) are the various *Agapornis*. I have found that single pairs of the *Agapornis* will agree well with any of the larger birds—both living and nesting well with them. Peach-faces are certainly the most aggressive and I feel the least reliable in mixed collections.

I would not trust the various African Lovebirds with small budgies and finches, but with larger birds they are perfectly safe. As they are very clever about tumbling quickly into their nests, there is little chance that a larger pair of birds would want the Lovebird's nest, filled with straw and leaves, as is generally the case. By hanging the Lovebird nest up close to the roof and leaving just enough space for the Lovebirds to sit on the nest top, all should be calm and peaceful. I frequently allow no perch outside the nesting entrance to stop or at least help prevent the larger and curious birds from looking in with such great ease. Last year a female Barraband made regular visits



to a young family of Bourke's by sitting on the perch outside the entrance hole and looking in at the mother Bourke feeding her babies. As the Bourke's did not object all was well—but this year the Barraband will have a hard time because the perch has been removed. This makes the entrance to the nest a little more difficult for the smaller birds too—but they do not seem to mind, and are certainly not discouraged by this.

**American species.** The beauty of some of the American psittacine species is undeniably great, but this is quite eclipsed by their voices. For this reason they have not been extensively kept even here in California. Some of the species appear to be not too aggressive, while others may be considered as too aggressive for mixed company. The only collection containing many American species here in California is that of Mr. G. Rayson Brown in Arcadia. On visits to his aviaries I have noticed that some Conures are being kept in with other birds—but generally they are just unmated odds and ends. Possibly he would let us know his observations on these American species. Mr. J. Buteyn, at San Luis Rey, also keeps some excellent American species, and at least two of the Conures in his collection have not been identified.

**Lories.** The Lories are so very aggressive that they cannot be kept with other birds. Mr. G. R. Brown once told me that a cock Ring-neck accidentally got into a pen containing a pair of Dusky Lories, and that by the time he discovered this, all that was left of the Ring-neck was a pile of green feathers on the floor. It does appear quite possible to mix Lories together, for Mr. Sheffler has done this in Arizona, keeping a number of different kinds together, but in aviaries, with no nesting facilities.

**Eclectus.** These large and beautiful Parrots do not seem to object to having companions. A pair in my father's collection have a pair of Cockatiels in their pen, and both the Eclectus and the Cockatiels get along fine. A second pair do not object to some lutino budgies that are housed with them. Some of the larger Parrots are slow moving, and so not likely to cause any trouble with any companions that are swift on the wing.

In a large pen (some 15 feet wide, 20 feet long, and about 12 feet high) the possibilities of keeping a variety of odds and ends is enormous. At the present time in this pen there are a large number of birds that are either too young to breed or a mate is not available for them. The following birds are all living in a state of contentment and agreement: a cock Blue Rosella, a cock Stanley, female Yellow Rosella, a cock Barraband, female Crimson-wing, three Ring-necks, a young Pileated, a pair of young Many-colours, a Lineolated, a pair of Eclectus, a Cockatiel, and a Blue-bonnet. In addition to this there were (prior to their being mated up) a King, a Red Rosella, and a Pennant's.



Although this cage contains birds that doubtless would fight one another in smaller aviaries, their present home appears large enough for all to live in peace. The precautions of double feeding stations and drinking fountains are doubtless no hindrance to the present happy state.

I think that the most important points in mixing psittacines are the double feeding and drinking stations, the provisions of nesting sites that are as far apart as is possible, and the provision of suitable perching facilities. It would be most interesting to have other members' experiences in mixing various birds. Who knows—maybe I'll find some place to put one more pair of birds without building a new aviary ? ! !

\* \* \*

## NOTES ON HARTLAUB'S TOURACOS

By D. H. S. RISDON (Dudley, Worcs., England)

Cecil Webb's very interesting article in a recent issue of the Magazine concerning the wild life of these birds prompts me to write the following notes on observations I have made of their habits in captivity.

In 1950 there was an adult pair of Hartlaub's Touracos at Dudley Zoo. They were housed in one of the large flight cages in the Bird House on their own, and that being my first summer at Dudley I was bitten with the desire to try and breed them.

I had no idea whether or not they were a true pair. There was certainly no obvious difference between them as far as appearance went, but they got on well together so we fixed up a bunch of twigs in a corner of the flight. The middle of this was flattened out and a shallow dish-shaped piece of wire netting was fixed to form a platform. On this some coarse hay was shaped to form a foundation for a nest. Needless to say this corner of the cage was screened from the public to give the birds as much privacy as possible.

Much to our delight the birds took to this nesting site almost at once. They spent a good deal of each day sitting on the platform side by side and I think they roosted there at night. I did not know then, as I discovered later, that these Touracos much prefer to roost on a platform of this nature rather than a perch, and in subsequent years, when I had them in an outdoor aviary containing several open-fronted nest-boxes, they invariably used them to sleep in.

In spite, however, of taking so well to the site we made for them the birds made no obvious attempt to build a nest. They did, however, show other signs of breeding condition. One bird, presumably the male, fed the other one with food regurgitated from the crop and



frequently displayed by tilting its head right back till its crest touched its back, exposing the throat, meanwhile uttering a low growling note. A form of threat display is to depress the crest which has the effect of enhancing the white patches in front of the eyes. At such times these patches appear dazzlingly white and are obviously intended to intimidate a rival. These are the only displays I have ever seen them do which is surprising considering the lovely colouring of Hartlaub's Touracos. Somehow I would have expected them to show the beautiful carmine of the flight feathers, but this never seems to be seen except when the birds are flying.

Matters continued in this sort of stalemate for some weeks and I began to think our efforts had been in vain and that the birds were just spoofing us, when suddenly one died. To our intense disappointment the post-mortem examination revealed an impacted egg in the oviduct, so that was that. Subsequent events, of which more anon, have more or less proved the other bird to be a cock and I am afraid that, although we imported some more the next year, the bird that died was the only hen we had.

The newly imported birds consisted of four obviously hand-reared specimens in immature plumage. This was like that of the adult, but all the colours were duller. Of these one died soon after arrival and we placed the other three with the single old bird in the Bird House where they passed the winter.

By the following spring the young ones had moulted into adult plumage and then trouble started. First one died suddenly and mysteriously, and some weeks later two of the remainder set about the third. Fortunately it was discovered what was happening in time and the odd bird was removed. Naturally I thought the two aggressors were a true pair which had come into breeding condition, and that summer (1952) I removed them to my garden aviary which is planted and not being directly accessible to the public has some degree of privacy.

Here the birds spent the summer and did absolutely nothing in spite of being given a variety of nesting sites in the shape of open-fronted boxes, closed boxes with only a hole entrance, and wire platforms fixed both in the growing bushes, as well as in bunches of twigs fixed up on the walls. They did, however, use the boxes for sleeping in, but never together as did the original pair. Each bird slept in a separate box. They never went to them until dusk when, having carefully looked about them, to see if the coast was clear, they made a sudden dive into their respective boxes and settled down for the night.

Although they didn't breed they did, however, give me a lot of joy in watching them in a really big aviary where they could show their graceful flight with the flash of brilliant carmine as they glided



from perch to perch. I think if I were only allowed to keep one sort of bird I should plump for Touracos. They seem to me to combine all the best qualities of the pigeon, parrot and pheasant families rolled into one. Their colouring is exquisite, and their movements the essence of gracefulness whether in flight or hopping, skipping and jumping along their perches. Moreover, they have delightful voices which, calling across the garden on a summer's day, make you feel they really have brought a bit of their native jungle with them.

It might be as well to record here the various noises they can make. Besides the well-known Touraco call "wowk wowk wowk" which both sexes seem to use when they are feeling pleased with themselves, there is the growling display note described above, which is also used as a note of aggression. The alarm note is a high pitched "chip chip" and anger aroused say at the sight of a cat is expressed in a kind of chatter which cannot be imitated in writing.

As my garden aviary is only a summer one and has no proper shelter, the Touracos were transferred to one of the Zoo aviaries for the winter where, apart from being shut in at night, they had no extra protection in the way of heat. They came through the Dudley winter, which can be extremely bleak, in fine fettle, which I think proves them to be a hardy species.

When the spring of 1953 came round I again transferred them to my garden aviary and as they still showed no sign of attempting to nest I thought I would see what a little jealousy would do. So I caught up the odd remaining bird which all this time had been living in the Bird House, and put him in with them. I stood by, half expecting there to be a frightful row, remembering how they had attacked him eighteen months before, but not a bit of it. Both birds jumped up one on each side of the newcomer and there ensued what I can only describe as a lot of billing and cooing between all three. So far from fighting they all seemed frightfully pleased to see each other and began feeding each other indiscriminately!

I felt justified, therefore, in leaving all three together to see what would happen. All this time, remember, I had been assuming that the original two were a pair. I had watched them and noted what I thought were differences in their appearance—more white on the facial markings of the cock and so on, but that's where I tripped up and my experience only goes to show how easily one can jump to conclusions. After some weeks of living in harmony the bird which I always supposed to have been the hen became somewhat aggressive towards the other two, then the position would be reversed and one of the others would seem to be top dog for a while.

No serious quarrelling took place, however, and I was content to let well alone, thinking that perhaps they were at last being stimulated into breeding condition.



Alas for my hopes. One morning after a period of tranquility in the aviary I noticed the newly introduced bird was missing. With a sinking heart I searched the aviary and eventually found its corpse crammed in a corner completely scalped. This made me think more than ever that the survivors were a true pair, but this winter, for accommodation reasons they were put back in the Bird House in one of the large built-in cages. They had not been there long before one set about the other and, but for the timely intervention of one of the keepers, would undoubtedly have met the fate of the other bird. As it was the feathers were scalped from the back of its head.

We are now left with two Hartlaub's Touracos living apart and I am reluctantly driven to the conclusion after three years' trying, that all our birds except the first one which died of egg trouble, must have been males—hence no efforts to nest.

Hartlaub's Touracos appear to be perfectly hardy. They stayed each year in an open aviary with only a bit of overhead shelter till well into October when night ground frosts were experienced. Even then they showed no discomfort and were only moved into more sheltered conditions because they are too rare and valuable to be trifled with.

They seem to be entirely fruit eaters and provided plenty of this is supplied, will eat little else. They will take boiled carrot, boiled potato, soaked bread and insectile food under protest, but never touch it if there is plenty of fruit. Grapes and cherries are favourites and privet berries are liked. They have large gapes and swallow grapes and cherries whole, disgorging the stones later. After swallowing a large cherry they sit still with a fatuous expression looking extremely uncomfortable for a few moments while it slips down.

They are keen bathers and although I have examined their bath water most carefully on many occasions, I have never seen any sign of the red colouring matter from their flight feathers being dissolved in the water.

\* \* \*



## THE AUSTRALIAN COLLECTION

By J. J. YEALLAND

A splendid collection of mammals, birds, and reptiles presented to the Zoological Society in commemoration of the Coronation and the Royal tour of Australia and Tasmania, arrived in London on the 8th April.

Sir Edward Hallstrom was instrumental in arranging this magnificent gift, and sent two of his staff, Mr. W. Turner and Mr. E. Hargreaves, to care for the collection on the long sea voyage. Due to first-class packing and expert care, the specimens arrived in excellent condition.

Taronga Zoological Park Trust; Sir Edward Hallstrom; Mr. David Fleay, the Zoological Society of Southern Australia; the Animals' and Birds' Protection Board, Hobart; the Agent-General for Tasmania; the Zoological Board of Victoria, and the Zoological Gardens of Perth all contributed generously to the collection, which totalled some 190 specimens.

The rarest of the birds are two Baudin's or White-tailed Black Cockatoos (*Calyptorhynchus baudini*), the first to be brought alive to this country for many years. A pair of Greater Palm Cockatoos (*Probosciger aterrimus*) of Cape York peninsula and the opposite coastal areas of New Guinea makes another attractive exhibit and an interesting comparison with two of the very closely allied Aru Island form that have been in the Parrot House since 1927 and 1946 respectively.

Other exhibits of especial interest that have not been in the collection since before the war are Tawny Frogmouths (*Podargus strigoides*), three of them hand-reared by Mr. Fleay; Australian Cranes (*Grus rubicunda*); White-backed and Black-backed Piping Crows (*Gymnorhina hypoleuca leuconota* and *G. tibicen*); Cereopsis Geese (*Cereopsis novae-hollandiae*), and Maned Geese (*Chenonetta jubata*).

Wedge-tailed Eagles; Laughing Kingfishers; Satin Bower-birds; Swainson's Lorikeets; Barraband's, Brown's, Pennant's, and Golden-mantled Rosella Parrakeets; Western Slender-billed, Bare-eyed, Leadbeater's and Greater Sulphur-crested Cockatoos; Bronze-winged, Brush Bronze-winged, Wonga Wonga, and Crested Pigeons; Plumed Ground Doves; Brush Turkeys; Emus; Australian Grey Ducks and Black Swans make up the remainder of the bird collection.

A special display of the whole collection is staged in the Antelope Paddock, and was officially opened on the 26th April by the Hon. Sir Thomas White, the High Commissioner for Australia.

\* \* \*



A BRIEF ACCOUNT OF A WONDERFUL DAY  
SPENT IN SEEING SIR EDWARD HALLSTROM'S  
COLLECTION OF PARRAKEETS IN SYDNEY,  
N.S.W., DECEMBER, 1953

By R. G. KIRKHAM (Clonskeagh, Co. Dublin, Eire)

I had come to Australia for a health trip, and to get away from the Irish winter, and was armed with a letter of introduction to that fairy godfather of Australian Aviculture, Sir Edward J. Hallstrom. Immediately on my arrival in Sydney I sent off my letter to him, and then sailed away for a short visit to Fiji and New Caledonia. Within twenty-four hours of sailing I received a Marconigram on board which read : " Delighted to see you on your return to Sydney," and Sir Edward was indeed as good as his word. I called at his office by appointment, and was cordially received and introduced to his chief collector and zoologist, Walter H. Turner, with the instruction to " show him everything ", and that is just what he did.

We started out the following morning at 8.30 a.m., and went first to Sir Edward's beautiful home at Northbridge, which is situated on a narrow neck of land overlooking Sydney Harbour. There the principal collection is housed, in all about 860 birds. The aviaries are built on three sides of the house, and take up, I would say at a guess, about two acres or perhaps a little more. Sir Edward has a great fondness for Macaws and Cockatoos, and where in the past I have seen perhaps five or six in a zoo collection, Sir Edward keeps no less than 67 Macaws of all the well-known species, including several pairs of the giant " Hyacinth " looking very beautiful and in tip-top condition, with not a feather astray. One pair in particular were obviously in breeding condition, making a great fuss of each other. The cock sitting close up beside his wife with " one arm around her neck " as Sir Edward put it. After visiting the Macaws, and feeling a little overwhelmed by them, I asked about Lovebirds, as these are great favourites of mine, and was taken to a range of aviaries each measuring about 10 feet by 6 and 7 feet high. There I was truly amazed to see in each compartment a flock of Lovebirds, nothing less. Sir Edward told me that at the start of each season he puts six or eight pairs of birds in each compartment, with plenty of nest-boxes, and allows them to go ahead without let or hindrance. At the end of the breeding season he usually finishes up with 35 or 40 youngsters in each division, and this goes for Peach-faced (*Agapornis roseicollis*) as well as the other less pugnacious species. I discussed this phenomenon with Walt Turner, and it is his considered opinion that if only a couple of pairs are kept together they usually fight for want of something better to



do, but if four or five pairs share the same compartment, they are so busy increasing the Lovebird population they haven't the time, or the inclination, to fight, and large and happier families are the result. This is something which will be only of purely academic interest to most Lovebird breeders at home, as very few of us have more than one or two pairs of any but Fischer's or Masked, and are too scared of losing any by fighting to risk more than one pair to a compartment.

It gave me a great thrill to see about 40 Black-cheeked and 20 or 30 Nyasas, but the biggest surprise of all was to see ten of the lovely little lutino Nyasas looking, as Ted Vane so aptly put it on one occasion, like "little irate Colonels", their orange-red cheeks giving them a really fiery appearance! Last, but by no means least, about 40 Peach-faced sitting in a row, and living in harmony together. They reminded me of the words of a popular song: "And never is heard a discouraging word," etc.

Having seen and marvelled at the Lovebirds, I mentioned "Princess of Wales" Parrakeets. I liked them so much, and was the proud possessor of an excellent pair. Sir Edward quietly took me to an enclosure near the Macaws, and there I saw them rise in a cloud from the ground where they had been feeding. I just could not guess how many there were, but there seemed to be at least a couple of dozen pairs. They all lived happily with a pair of Blue-bonnets, several pairs of Hooded and Many-colours, and one or two odd birds, and what a picture they made!

After leaving the "Princess of Wales" with reluctance, we made our way to another range of aviaries constructed of concrete, coloured and shaped to look like logs, and of very attractive appearance. These housed a very large and varied collection of Cockatoos, numbering about sixty-five in all, which included the Yellow-tailed Black, the Red-tailed Black, and the White-tailed Black. There were also several pairs of the Palm Cockatoo (*Probosciger aterrimus*) very Black! very Beautiful, and, I should say, very hard to handle! I might mention in passing I also saw a lone specimen of the Lesser Vasa Parrot, also known as the Pigeon Parrot of Madagascar. This is a most unusual looking slim bird, washy black in colour, with a small head, and light-coloured horn beak, about the size of a Rock Pebbler, but with a very long neck, which to my mind, quite spoils its appearance. The lovely little Musschenbroek's from New Guinea, a small dwarf parrot, green shading to yellow, with a crimson breast, is a very friendly little bird which Sir Edward has recently been successful in breeding. In a nearby enclosure was a whole flock of little Fig Parrots (the Double-eyed Dwarf), little bigger than a Lovebird, the cocks with dark red heads and the hens with grey heads. Noisy and chattering, never still, always on the move, they made a most attractive sight.



I also had a very good look at seven Glossy Black Cockatoos, but as there is quite a story attached to them, they must be the subject of some further notes.

After a cup of morning tea with Sir Edward, I was whisked away to his week-end retreat at Mona Vale, about 25 miles outside Sydney, where a small collection of about 100 of the most prized specimens are housed, and there I saw three of the most rare and wonderful Parrakeets in Australia, which I believe nobody else possesses at the moment. Four pairs of "Paradise Parrakeets", two cock Golden-shouldered Parrakeets and a Ground Parrakeet, and all in the same collection, virtually rubbing shoulders together. If I say it was worth travelling from Ireland to see the "Paradise Parrakeets" alone, I know my readers will understand and forgive my enthusiasm. How can I describe them? The cock is a long, slim bird with the forehead and under tail-coverts red; the crown of the head black, the face and breast bright green shading to a blue which reminds one of shining butterfly wings, and the whole bird looking a most graceful and enchanting sight, enough to delight the heart and, whisper it, arouse a little touch of envy in every true bird keeper. My description of this beautiful bird (I'm liable to run out of adjectives when talking about it) is perhaps a little sketchy, but as Sir Edward kindly allowed me to take a colour film of the birds, and they were most co-operative, I am looking forward to seeing, for the first time on any screen, "The Paradise Parrakeet." It should, of course, be explained that they are really Hooded  $\times$  Many-coloured Parrakeet hybrids.

The Golden-shouldered Parrakeets, also very rare, and to be found only in one or two places in Australia, was believed by many to be extinct, but was rediscovered by Walt Turner to take their place in Sir Edward's collection. The cock has a black head with a bright golden-yellow frontal band and golden-yellow patches on the wings and shoulders, and the body is bluish-green. The hen is a pale edition of the cock, with the body yellowish-green instead of blue. I might add that the colours of both cock and hen appear to change in different lights.

The Ground Parrakeet is stated in all the best books to be found in the coastal areas in New South Wales, Victoria, South Australia, and Tasmania, but I'm told on very good authority, that less than half a dozen are known to exist in aviaries throughout Australia, in fact very few bird keepers have ever seen one, let alone kept it. Mr. Turner told me they have had great difficulty in keeping theirs. The bird is very nervous and shy, hiding in the grass on the floor of the aviary, and then at the slightest noise or disturbance, hurling itself at the wire netting. It will be interesting to know if a mate can be found and if it can be persuaded to go to nest in an aviary. Time alone will tell.

Sir Edward also possesses the largest collection of Birds of Paradise



in the world, and he is coming to Switzerland in May to lecture on them, their habits and nuptial display, and as I am sure, complete and comprehensive reports will appear in the Magazine, I propose to refrain from comment !

In concluding these notes, I should like to express my thanks and pay tribute to the generosity of Sir Edward Hallstrom. He has done more than any man alive to save many beautiful species of Australian birds from extinction, to preserve them for posterity, and to make it possible for aviculturists in many lands to enjoy their beauty, by sending them to zoos all over the world.

After my visit to Mona Vale, I felt I had seen everything that mattered in the avian world, but not so. Walt Turner took me to Taronga Park, and there I saw many of the treasures presented to Taronga by Sir Edward. Having spent a few hours there, I came to the conclusion that Taronga was misnamed. It really should have been called Hallstrom Park, because Sir Edward, more than anyone else, is responsible for Taronga Park being the finest zoo in the southern hemisphere.

About the birds in Taronga I shall try to tell you a little later !

\* \* \*

## LONDON ZOO NOTES

By J. J. YEALLAND

Three species new to the collection have recently been received. They are the Baudin's Cockatoos, on which a note appears elsewhere in this issue ; a pair of Philippine Ducks (*Anas luzonica*), purchased, and a Swainson's Buzzard (*Buteo swainsoni*), presented by the Paignton Zoological and Botanical Gardens.

Other presentations include a Short-toed Eagle (*Circætus gallicus*) ; a Crossbill (*Loxia curvirostra*) ; a Stone Curlew (*Burhinus ædicnemus*), picked up at Biggin Hill during the severe weather of February ; a Gannet (*Sula bassana*) ; six Jobi Island Doves (*Gallicolumba jobiensis*) ; a Fieldfare (*Turdus pilaris*) ; a Hawfinch (*Coccothraustes coccothraustes*) ; a Regal Sunbird (*Cinnyris regius*) ; a Bronzy Sunbird (*Nectarinia kilimensis*) ; a Kenya Malachite Sunbird (*N. famosa ænigularis*) ; and four Uganda Buff-breasted Sunbirds (*Cinnyris venustus igniventris*). The common name of this Sunbird is a poor one, for the area of buff is small and occurs only where the violet of the upper breast meets the orange of the under parts. The Orange-bellied or, as the scientific name suggests, the Fire-bellied would be a better name.

Of the birds received in exchange a Rüppell's Parrot (*Poicephalus*



*rüppellii*) is of particular interest and rarity. As pointed out by the late Duke of Bedford, this is the only parrot of which the female is more brightly coloured than the male.

An African Ring-necked Parrakeet (*Psittacula krameri*) ; four Peach-faced or Rosy-faced Lovebirds (*Agapornis roseicollis*) ; a Broad-tailed or Eastern Paradise Whydah (*Steganura paradisea nilotica*) ; a Shiny Black Whydah (*Vidua hypocherina*) ; and a Thick-billed Weaver (*Amblyospiza albifrons*) have also been received in exchange.

The King Penguin hatched last summer has completed its moult, shedding its down more quickly than did the previous year's young one.

The Great Condors laid an egg during March, but somehow managed to push it off the nesting ledge on to the unsympathetic concrete below.

Of the four Vieillot's Fire-back Pheasants hatched late last summer one has survived and could now be regarded as being fully reared. Hopkinson records successes in France, but so far as I know this is the first breeding of this pheasant in Great Britain.

\* \* \*

## NEWS AND VIEWS

J. M. Spence, Cape Town, has bred one Cape Robin, four Cape White Eyes, two Cuban Finches, one Golden Sparrow, eleven fawn Zebra Finches, and some Waxbills.

\* \* \*

Miss Phyllis Barclay-Smith has been awarded the gold medal of the Sveriges Djurskyddsforeningars Riksförbund for her work in connection with bird preservation, and especially on oil pollution of the sea.

\* \* \*

How many blue Ring-necked Parrakeets will be bred this year? Already a report has been received of a nest of three hatched.

There is every prospect of the blue Masked Lovebird population of this country being substantially increased. There are now something like a dozen pairs of potential breeders in the hands of experienced aviculturists.

\* \* \*

Included in the Australian collection recently presented to the Zoological Society of London were two Baudin's or White-tailed Black Cockatoos. This is an extremely rare species, and the Zoological Society appears to be under the impression that these two birds are



the first to arrive alive. This is not the case. In Tavistock, *Parrots and Parrot-like Birds in Aviculture*, page 150, we read : " Young birds of this species were imported by Mr. Frostick many years ago, and fed by hand on sponge-cake and hard-boiled egg. He had difficulty in inducing them to take to seed and they unfortunately succumbed to fits, no doubt by reason of the too-stimulating properties of the egg."

In addition, Dr. and Mrs. Anningson, of Cambridge, had one in their collection in October, 1908. Wesley T. Page (*B.N.*, 1908-9, 225) describes this bird, and says it is " probably the only one in Europe ".

\* \* \*

David West writes that his father's blue Fischer's Lovebird has reared a nest of three and is again on eggs.

\* \* \*

Sir Edward Hallstrom reports in a cable dated 6th May that his Glossy Black Cockatoos have hatched and are rearing a young one.

\* \* \*

The Bronze Medal of the Avicultural Society of South Australia has been awarded to L. Ratzmer, for breeding the White-winged Whydah ; and for breeding the Willie Wagtail by the late S. E. Terrill. L. Ratzmer has also been awarded the Society's Silver Medal for the year's best breeding achievement.

\* \* \*

#### WATERFOWL RINGING SCHEME—DETAILS OF RECOVERIES

<i>Date ringed.</i>	<i>Species.</i>	<i>Ringed by.</i>	<i>Date recovered.</i>	<i>Place where recovered.</i>
7.8.1950	Wigeon	Severn Wildfowl Trust.	19.5.1952	Nr. Syktyvkar Town, Komi Republic, U.S.S.R.
— 1952	—	Severn Wildfowl Trust.	—1.1954	Le Havre, France.
15.10.1953	Carolina ♀	Ministry of Works (Bailiff of Royal Parks).	—4.1954	Birdcage Walk, London, S.W. 1. Apparently struck by a passing vehicle.

A. A. P.

\* \* \*



## CORRESPONDENCE

In my view the common names of birds should, where practicable, be descriptive of their form, plumage, voice, habits, habitat, or distribution, and they should never be named after persons.

In the case of the Queen Alexandra's or Princess of Wales' Parrakeet, a far better name would be the Pink-throated (or even the Racquet-winged), while the Alexandrine (presumably named after Alexander the Great) should be the Greater Indian Ring-necked.

Terms like splendid, beautiful, superb, and so on, should not be used. The Blue-backed Manakin is a better name than the Superb for this member of a family containing many superb birds, while there are plenty of Sunbirds other than those so named that are beautiful, splendid, and superb.

The Many-coloured Parrakeet is well named, but Paradise Parrakeet, Tanager, Whydah, or Shelduck are meaningless. The Elegant Grass Parrakeet is not more elegant than others of the genus, all of which, by the way, are blue-winged.

Names like Festive Amazon, Mercenary Amazon, and Sordid Parrot are unsuitable, but not more absurd than those given to "Amazons" coming from districts as far from the Amazon valley as the West Indies or the forms of "Senegal" Parrot living far from Senegal.

There used to be a story of a London dealer who, finding that trade in Avadavats was poor, advertised them as Tiger Finches, whereupon they sold like hot cakes. If Avadavats bore the slightest resemblance to tigers, he would have been justified in changing this corruption of Ahmadabad.

J. J. YEALLAND.

## SPLENDID × TURQUOISINE GRASS PARRAKEET HYBRIDS

In the past Turquoise Grass Parrakeets have bred well for me, and, perhaps due to the climate, Splendids have not done so well. I thought a hybrid between the two might perhaps be more hardy, and in this I may possibly be right, because during the last two seasons I have bred fourteen hybrids—eight in 1952 and six in 1953.

The cock hybrid is very pretty and looks like the cock Splendid, except that the red on the breast is not so extensive and it has the small red patch of the Turquoise on the shoulder. Without the latter it would be difficult to distinguish it from the pure Splendid. Apart from the fact that the blue is not so deep on the face of the hen hybrid she looks exactly like a pure Splendid. This lighter colour is so slight that it might not even be noticed. I tried to breed with two pairs of the hybrids last season, but had only clear eggs. Edward Boosey suggests that they may be fertile in the second year.

Last season I also bred nineteen Bourkes—from two pairs, one Brown's × Mealy, four green Indian Ring-necks and two lutino, two Barraband's, one Crimson-wing, twelve Masked Lovebirds, two Turquoisines, two Elegants, one Barnard's, eight Red-rumps, and one Princess of Wales.

CRAWFORD McCULLAGH.

WHITEABBEY,  
BELFAST.

## PRINCESS OR QUEEN?

During the course of Mr. Stuart's Exploratory Expedition into Central Australia in 1862 Mr. Frederick G. Waterhouse made an ornithological collection. The Board of Governors of the South Australian Institute forwarded a selection to John Gould for his inspection. Included were specimens of what Gould describes as "a new and very beautiful species of Parrakeet pertaining to the genus *Polyteles*, . . ."

It is perhaps worth recalling Gould's naming of this species. He writes: "The specific appellation I would propose for this novelty is *alexandrae*, in honour of that Princess who, we may reasonably hope, is destined at some future time to be the Queen of these realms and their dependencies, of which Australia is by no means the most inconspicuous" (*P.Z.S.*, 1863, 232). Here Gould does not give a vernacular name, but in his *Handbook to the Birds of Australia*, vol. ii, p. 32 (1865) and his *Birds of*



*Australia*, Supplement, pt. iv, pl. 62 (1869) he calls it the Princess of Wales' Parrakeet.

Who first changed the name to Queen Alexandra's Parrakeet cannot be determined after this lapse of time. Possibly it was almost automatically adopted after the accession. How has this species been called in Australian modern ornithological literature? It would seem that almost every possible variation has been used: E. A. Le Souëf (1915) Princess Alexandra Parrakeet; G. M. Mathews (1916-17) Alexandra Parrot; R.A.O.U Checklist (1926) Princess Parrot; Neville W. Cayley (1938, 1940) Princess Parrakeet and Princess Parrot; Dr. Alan Lendon (1949) Queen Alexandra Parrakeet. And for those who care for none of these there is Rose-throated Parrakeet and Spinifex Parrot for good measure.

A. A. PRESTWICH.

61 CHASE ROAD,  
Oakwood, N. 14.

#### COLOUR CHANGE IN THE BEAKS OF YOUNG DERBYAN PARRAKEETS

I can confirm that the colour changes in the beaks of young Derbyans as described by Mr. Rudkin (*AVIC. MAG.*, Nov.-Dec., 1953, p. 219), the reappearance of the red in young males being first apparent on the lower mandible and gradually spreading over the upper. The change was completed in those I have bred in 15-18 months.

There is, however, a slow and very gradual colour change in plumage which commences earlier than the "beak change", and I have found it possible to determine the sex from this change at a much earlier stage—certainly less than twelve months. In the adult female there is a very distinct pale pink ring round the neck forming a border to the grey hood. This ring is absent in the male at any age, but begins to develop on the young hens with the partial moult, which occurs not long after the birds leave the nest, and is followed by the appearance of a pink suffusion on the upper breast feathers.

The appearance of these changes would, of course, depend to some extent on the general development of the young birds, and would doubtless be delayed if they were backward or ill-nourished.

K. A. NORRIE

ELMSTONE,  
HIGHFIELD ROAD,  
PURLEY, SURREY.

\* \* \*

#### REVIEWS

##### RECORDS OF PARROTS BRED IN CAPTIVITY (ADDITIONS).

By ARTHUR A. PRESTWICH. London, 1954. Price 10s. net.

This volume contains 121 additions to the records already published, largely obtained by the author's careful search through various Australian periodicals, notably *Australian Aviculture* and *Bird World*. As Mr. Prestwich states in his preface, much of interest has come to light as a result of this search, and thus made the Australian records less incomplete. The present volume is a valuable addition to its predecessors, and one that no aviculturist interested in Parrots should be without.

The author makes an appeal for further information, particularly relating to Germany to be embodied in "Further additions", and it is hoped all aviculturists will respond to this request to the best of their ability.

P. B-S.



THE OVERLOADED ARK. By GERALD M. DURRELL. Faber and Faber, Ltd., London, 1953. Price 15s. net.

The collection of wild animals rarely fails to arouse interest, and this account of a six months' collecting trip to the little known British Cameroons will appeal to a wide public. The author's main interest was in mammals and reptiles, but he was accompanied by Mr. J. J. Yealland, whose special concern is birds.

The greater part of the book deals with the capture of mammals in the great rain forests in the neighbourhood of Eshobi, and subsequently with collecting around Bakebe where Mr. Yealland had made his headquarters. The author gives a very entertaining account of his various experiences with native hunters and the trials and disappointments of hand-rearing young animals and keeping alive a very assorted collection with their different food requirements. The rare Angwantibo, *Arctocebus*, the Black-legged Mongoose, and the curious Giant Water Shrew, *Potomogale*, were among the more interesting captures, but many visitors to the London Zoo will find a special appeal in the story of the life and death of Cholmondeley, the famous chimpanzee who, after being brought back from the Cameroons, twice escaped from Regent's Park.

There are relatively few references to birds, but every aviculturist will sympathize with the account of the heavy-footed hen foster parent, who after successfully hatching a brood of Crested Guinea-fowl, equally successfully exterminated them by walking over the young chicks with complete unconcern and a bland expression on her face.

E. H.

DIE UNZERTRENNLICHEN [LOVEBIRDS]. By HELMUT HAMPE. Published by Verlag Gottfried Helene. Pfungstadt/Darmstadt. 1953.

Helmut Hampe was a great aviculturist, and a great authority on Parrakeets, particularly love-birds, or *Agapornis*, and a debt of gratitude is due to Dr. J. Steinbacher for arranging the production of a second edition of this book. Published in 1934, *Die Unzertrennlichen* was immediately in great demand for it was a comprehensive and informative book and became out of print shortly before the war. As Dr. Steinbacher states in his preface to the new edition, "Everything that was known about Lovebirds is to be found in that book."

Helmut Hampe was wounded in the first world war, and during the last ten years of his life, before his early death at the age of 42, in 1939, he had to remain in an invalid chair, but despite these drawbacks he carried on his avicultural studies with an ardour and attention to detail that has seldom been surpassed. His articles on his breeding experiments with Red-faced Lovebirds and with Hooded Parrakeets



and on *Brotogeris* Parrakeets published in the AVICULTURAL MAGAZINE in 1939, were outstanding, and the cessation of his valuable studies was a severe loss to aviculture.

*Die Unzertrennlichen* opens with a chapter of general information about Lovebirds in which the author explains how the Greek word *agapein* = love, combined with *ornis* = bird, was given to these birds by J. O. Selby in 1826, and how this was translated into the vernacular name of *Inséparable* in French, Lovebird in English, and *Unzertrennlich* = Inseparable, in German. A map showing the distribution is included, together with a table of the points of similarity in coloration of the six species and of the four races of *personata*. Detailed descriptions of the birds then follow and the Latin, German, and English names are given, with full information regarding breeding, rearing, and behaviour of the birds in captivity.

In his preface, Dr. Steinbacher deplores the fact that it has not been possible to include all the illustrations which appeared in the original book as these were destroyed during the war, but nevertheless there are a number of most interesting photographs of various species.

Whilst the text is in German, all those who are interested in these attractive birds will wish to possess this book, even without knowing the language, and with a dictionary they will be able to obtain much information of value.

P. B-S.



## CANDIDATES FOR ELECTION

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## NEW MEMBERS

The twenty Candidates for Election, proposed in the March-April, 1954, number of the AVICULTURAL MAGAZINE, were duly elected members of the Society.

## CORRECTED ADDRESS

Y. S. SHIVRAJKHACHAR of Jasdan, Jasdan, Saurashtra, India.

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- J. C. GARRATT, to "Crossways", Sea Avenue, Rustington, Sussex.
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- W. M. SANDS, to Silver Birches, Farrar Lane, Adel, Leeds 6.
- Dr. M. A. SHELLIM, to c/o The Eastern Bank, Ltd., 2-3 Crosby Square, London, E.C. 3.
- G. WILSON, to Taormina, 25 Bushmead Road, Eaton Socon, St. Neots, Hunts.

## CHANGE OF STYLE

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## DONATIONS

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### WANTED

Urgent—A sitting of Peafowl eggs, also Ornamental Pheasant eggs.—B. BELFIELD, Alma House, Dalton, Parbold, Nr. Wigan, Lancs.

AVICULTURAL MAGAZINE, 1925 and 1927.—J. H. REAY, Cranmore, The Close, Hillingdon, Middx.

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# AVICULTURAL MAGAZINE

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## THE AVICULTURAL MAGAZINE

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YELLOW-CHEEKED CONURE.



# AVICULTURAL MAGAZINE

THE JOURNAL OF THE AVICULTURAL SOCIETY  
AND THE AVICULTURAL SOCIETY OF AMERICA

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JULY-AUGUST, 1954

## YELLOW-CHEEKED CONURE

(*Aratinga pertinax chrysophrys*)

By A. A. PRESTWICH (Southgate, England)

Swainson (1837) was the first to describe this Parrakeet and give it full specific status under the name *Conurus chrysophrys*. De Souancé (1856) also recognized it as a species, compared it with the Brown-throated (*aeruginosa*) and the Cactus (*cactorum*) and figured it (1857), giving it the vernacular name "Perruche des Cactus à joues brunes".

Various other authors recognized it, but Salvadori (1891, 1906), owing to limited material, considered there were only four species—*cactorum*, *aeruginosus*, *ocularis*, and *pertinax*—in this group, regarding *chrysophrys* as synonymous with *aeruginosus*. Later (1912), having had an opportunity of examining a large series of specimens, loaned by the Hon. W. Rothschild, he admitted eight species—"C. *cactorum*, from S.E. Brazil, C. *xanthogenius*, from Bonaire, C. *pertinax*, from Curaçao and Saint Thomas, C. *ocularis*, from Panama, C. *aeruginosus*, from British Guiana and Venezuela, C. *arubensis*, from Aruba, C. *tortugensis*, from Tortuga Island, and C. *chrysophrys*, from Colombia."

Peters (1937) has rearranged this group, and recognizes eight forms :—

### *Aratinga pertinax*

<i>ocularis</i>	Brown-eared Conure.
<i>aeruginosa</i>	Brown-throated Conure.
<i>tortugensis</i>	Tortuga Conure.
<i>margaritensis</i>	Margarita Brown-throated Conure.
<i>chrysophrys</i>	Guiana Brown-throated Conure.
<i>arubensis</i>	Aruba Conure.
<i>pertinax</i>	St. Thomas Conure.
<i>xanthogenia</i>	Bonaire Conure.

These eight forms, being sub-species of one species, show considerable variation in plumage, in fact it would be remarkable if there were not intergradation.



Peters gives the habitat of *chrysophrys* as British Guiana, Surinam, and Cayenne, whereas Salvadori gives Colombia. The Colombian bird is, however, the true *aeruginosa*.

Nothing appears to have been written about the life of this Conure in the wild state : and until the recent importations of the so-called " St. Thomas's " it was unknown to English aviculture—at least there are no records of its arrival in this country.

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## DIAMOND JUBILEE CELEBRATIONS

1894-1954

The Diamond Jubilee of the Avicultural Society was celebrated by an Avicultural Conference held in London from 17th-19th June, 1954. The meetings were held in the Meeting Room of the Zoological Society of London, Regent's Park, London, N.W. 1, by kind permission of the Council.

In opening the proceedings at 10.30 a.m. on Thursday, 17th June, 1954, the President of the Conference, Miss Phyllis Barclay-Smith, said that the Diamond Jubilee was a most important occasion in the history of the Society. At the time of the 50th Anniversary the only means of marking that important milestone in the Society's history had been by the publication of a Jubilee Supplement of the AVICULTURAL MAGAZINE. In that Supplement it had been stated that in the ordinary course of events the attainment of the Avicultural Society's 50th Anniversary would have been celebrated with due festivity—scientific and social ; it had been the Hon. Secretaries' happy idea to celebrate the 60th Anniversary with the scientific and social activity which had not been possible ten years ago, in the middle of a world war. It was most encouraging that so many members of the Society and guests had travelled, some of them very great distances, from different countries to take part in these celebrations, and they were warmly welcome.

The Avicultural Society was founded in October, 1894, when there were 52 members, to-day they numbered 982, and perhaps at the end



of this Jubilee year they might reach the thousand mark. In the early days of the Society the membership had been chiefly concentrated round Brighton, where the Hon. Secretary, Dr. C. S. Simpson, lived, but now there were members in Africa, Australia, Austria, Belgium, Bermuda, Canada, Ceylon, Denmark, Dutch Guiana, Finland, France, Germany, Holland, Hongkong, Hawaii, Iceland, Italy, India, Japan, New Zealand, Norway, Portugal, Sweden, Sarawak, United States, and the West Indies. Though none of the founder members were still living, she was particularly glad that Mr. Seth-Smith, who joined the Society in December, 1894, and therefore only missed being a founder member by two months, was here to-day. Mr. Seth-Smith had always played a leading part in the affairs of the Society, and rendered great service both to it and to aviculture, particularly during the time when he had edited the *AVICULTURAL MAGAZINE*.

The Society had only had four Presidents, the first the Countess of Bective had been President for one year, she was followed by the Hon. and Rev. Canon Dutton who was President from 1896 to 1920, being succeeded by Mr. H. D. Astley in 1921, who remained in office till 1925. Since 1926 Mr. Alfred Ezra had been President and under his wise guidance the society had grown and prospered—he had been President for nearly thirty years, and the Council had decided that the Diamond Jubilee celebrations would be a suitable occasion on which to present the President with a small token of the esteem and affection in which he was held. Miss Barclay-Smith then presented Mr. Ezra with an illuminated scroll, and read to the meeting the wording upon it :—

“ Presented to Alfred Ezra, O.B.E., President of the Avicultural Society on the occasion of the Diamond Jubilee of the Society by the Members of the Council as a token of their affection and appreciation of his many years of office and notable contributions to Aviculture.”

The scroll, painted by Mr. D. M. Reid-Henry, contained vignettes of Pink-headed Duck, Crowned Crane, Humming Bird, and blue Alexandrine Parrakeet—symbolic of Mr. Ezra's main avicultural interests.

Miss Barclay-Smith formally declared the Conference open, and then gave details of the letters and telegrams of congratulations and good wishes which had been received from members throughout the world, as follows :—

*Australia*.—Sir Edward Hallstrom, who has been prevented at the last moment from attending ; H. Manfield, Adelaide Zoo ; Ray Murray, H. S. Sewell, and C. Fechner ; L. M. Campbell, Secretary, Avicultural Society of Australia ; Dr. Alan Lendon who wrote,



"I wish the Society had been founded a year earlier, as I should then have had a chance of being present at its Diamond Jubilee. Please give my greetings to all friends attending"; Alex Holmes, Editor *Bird World*: "To visit London is an ambition of most British subjects—London and the Diamond Jubilee of the Avicultural Society would be the greatest experience of a lifetime. I trust that the success of this historic occasion will be a tribute to the organization of your Society."

*Belgium*.—J. Bruyneel and M. Beulcke, Jean-Pierre Derscheid and Madame Gustav Derscheid, Willy Friling, Leon Lippens.

*Ceylon*.—Major A. N. Weinman, Zoological Gardens of Ceylon.

*Denmark*.—Axel Reventlow, Copenhagen Zoo.

*Finland*.—C. af Enehjelm, Helsingfors Zoo.

*France*.—R. D. Etchécopar, Secretary-General, Société Ornithologique de France.

*Germany*.—Dr. W. Windecker, Zoo Gardens, Cologne; Alex Hampe, Horst c. Pohle, and Joseph Rath.

*Holland*.—Lt.-Col. C. C. Geertsema, Adjutant to Prince Bernhard of the Netherlands; J. H. Noordzij.

*Iceland*.—Dr. Finnur Gudmundssen.

*India*.—Shivrajkhachar of Jasdan; Dr. S. C. Law, "My warmest felicitations for the occasion which I hope and pray will prove a grand success"; C. M. Jasawalla.

*Italy*.—The Marquis Fioravanti, Professor Alessandro Ghigi.

*New Zealand*.—W. A. Moore, Rowland Hutchinson, "I would like an empty chair kept for our Society."

*Norway*.—G. A. Gjessing.

*Portugal*.—Duke of Palmella and Joaquim Simões.

*Portuguese East Africa*.—E. H. Hawke.

*Sarawak*.—Alastair Morrison.

*South Africa*.—J. W. M. Anderson and W. R. Carthew.

*U.S.A.*—Lee Crandall, General Curator Emeritus, New York Zoo. Society; J. A. Griswold, Philadelphia Zoo; Kenton C. Lint, Zoological Society of San Diego; George P. Vierheller, St. Louis Zoo Park; Professor Carl Naether, "I should like nothing better than the opportunity to mingle with men and women who are very much 'bird-minded' and 'bird-hearted'."

The following papers were then given:—

*Mr. David Seth-Smith.*

#### THE FOUNDATION AND EARLY DAYS OF THE AVICULTURAL SOCIETY

"The Avicultural Society may be said to have commenced its life in Brighton in 1894, thanks mainly to two gentlemen, interested in the keeping and breeding of foreign birds, Dr. C. S. Simpson, a medical practitioner, and Mr. Horatio R. Fillmer, a solicitor. But



these were supported by several others. There was Mr. Reginald Phillipps, a retired Civil Servant and very experienced aviculturist, living in London; Dr. Arthur G. Butler, of the Entomological Department of the British Museum, who lived at Beckenham; Mr. J. B. Housden, a retired business man, living at Sydenham; the Hon. and Rev. F. G. Dutton, of Bibury Rectory, and Mr. H. T. T. Camps, the two chief authorities of their day on Parrots. And there was Mr. John Frostick, who most of those present will remember to have met at the great bird shows, and Mr. W. H. St. Quintin, who I shall mention again later. The first President was the Countess of Bective.

Dr. Simpson was Honorary Secretary, and Mr. Fillmer Treasurer, and these two together edited the Magazine. The printers and publishers were Messrs. W. T. Moulton, of Brighton, and they served the Society very well for many years.

It was considered desirable to invent a name to denote 'a person interested in the keeping and breeding of birds'. Such persons had previously been known as 'Bird Fanciers', a term which included those who kept any kind of bird, domestic or otherwise. The term 'Aviculturist' being analogous to 'Horticulturist', seemed to fill the bill, and we read, 'Unless any one will suggest a better name we beg to subscribe ourselves "Aviculturists"'.

There were several societies connected with birds and bird-keeping which existed for the purpose of holding meetings to discuss their problems, but there was also a large number of persons scattered about the country, though too far separated to meet often. It was therefore felt that a magazine managed by experts on the subject who would be prepared to advise members both in print and by means of the post, would be a great help. So it was decided to start the first number of what was to be called the 'AVICULTURAL MAGAZINE', although with a membership of only 52, but the funds for the first year were generously guaranteed by Mr. Fillmer. He wrote that the Society must be self-supporting after October, 1895, and he would not be satisfied until the membership was up to 200.

Queries were answered by what was then the penny post, and the more interesting of these published with the answers in the Magazine.

The object of the Society was the study of Foreign and British Birds; poultry, pigeons, and Canaries being outside its scope. The subscription for the first year was five shillings with an entrance fee of two-and-sixpence, but in 1899 this had to be raised to seven shillings and sixpence, and in 1900 to ten shillings. Even this was cheap enough, considering the Magazine was published every month.

Although the holding of shows was never an object of the Society and not encouraged, reports of the more important of these were regularly published in the Magazine, and very good reports they



generally were, written by such authorities as Reginald Phillipps, H. R. Fillmer, C. S. Simpson, and others.

By the end of its second year the membership had increased to 173, and included such names as J. L. Bonhote, O. E. Cresswell, Rev. C. D. Farrar, Frank Finn, E. G. B. Meade-Waldo and W. Swaysland.

At the end of his second year of Secretaryship, Dr. Simpson found the time occupied by his medical work made it impossible for him to continue and relinquished the post. He had successfully seen the Society through its teething troubles, and now handed it over to his friend and colleague, H. R. Fillmer, who also became Editor of the Magazine. He certainly carried out the work well, and to him must go most of the credit of having made the Society.

Volume III (Nov., 1896-Oct., 1897) was considerably enlarged, the number of members having risen to well over the 200 mark, and four coloured plates from original drawings by F. W. Frohawk were issued. These were hand-coloured, a very usual process in coloured illustrations of birds in those days. And there were two very nice drawings, in monochrome, by H. D. Astley.

From now on the Magazine went ahead, increasing in size with every volume, and the quality of the articles and illustrations was excellent.

In 1899, Mr. Fillmer resigned from his post of Honorary Secretary, for which most at least of the members were very sorry as he had done so much for the Society. He had put forward a plan for the enlargement of the scope of the Magazine by including domestic birds such as canaries, but his proposal met with very strong opposition and no support, which apparently distressed him considerably. Many years later he was made an Honorary Member and Vice-President of the Society.

And now a few words about some of the principal aviculturists of those days, most of whom I could claim as valued friends.

I think the first I met, and it was in November, 1894, was J. B. Housden, who lived in Sydenham. He possessed some large aviaries, and used to breed a number of Australian Crested Doves, a species I was greatly taken with at the time, as well as some of the Australian parrakeets, while in a small aviary in one corner I well remember a very fine pair of Great Eagle-Owls with two young almost as large as themselves. After showing me his birds, Mr. Housden took from his pocket what looked like a small pamphlet which he said he thought would interest me, as it was the first number of a new publication called the AVICULTURAL MAGAZINE, published by a new Society he thought I might like to join. I was much interested, and asked him to propose me as a member, which he did, though I just missed being actually an Original Member.

Housden lived almost outside the gates of the Crystal Palace where, at the great shows held there, he won many prizes for his birds.



Not far from him lived Dr. A. G. Butler, who was on the staff of the Natural History Museum, though in the Entomological Department. His hobby was aviculture, and he kept a fairly large number of foreign birds in cages and loose in a bird room, though later he built a large open-air aviary in his garden. His book, *Foreign Finches in Captivity*, illustrated by Frohawk, is now long out of print, but he wrote several other books and many articles in the Magazine.

Reginald Phillipps, at the time an elderly, white-bearded and charming man, lived in a small house in the Hammersmith district, and it was always a pleasure to visit him and his very charming wife, as he was very keen and knowledgeable on all matters avicultural. He kept a large number of foreign birds, mostly rare species, and was very successful in breeding them. His back garden was not very large, but the whole of it was completely wired over, the garden walls forming the sides of the aviary which was divided into two parts, the further half grown into a dense jungle. The half nearest to the house was connected with one of the rooms, probably originally the drawing-room, now forming the covered part of the aviary. It contained also several cages where new arrivals would rest until considered fit to be let out. Amongst his outstanding successes were the breeding of the Australian Blue Wren and Regent Bower Bird, neither of which had been bred elsewhere in captivity.

Phillipps was a very fruitful contributor to the Magazine, his articles being complete and explicit in every detail. He later took over the Secretaryship of the Society.

On the retirement of Fillmer from the Secretaryship in 1899, the post was taken by J. L. Bonhote, while O. E. Cresswell became Editor. Bonhote when he joined the Society soon after its foundation, was an undergraduate at Cambridge and a student of Professor Alfred Newton from whom he, no doubt, acquired much of his keenness for British birds. He later kept many, especially concentrating upon waterfowl, in the hybridizing of which he obtained much valuable information as to their affinity towards one another. He wrote a very good book on British birds.

O. E. Cresswell, of Morney Cross, Hereford, specialized chiefly in foreign doves and parrakeets, though keeping many other birds as well.

E. G. B. Meade-Waldo and W. H. St. Quintin were, I think, cousins, the one living at one time in Hampshire, later at his family seat, Stonewall Park, Edenbridge, the other at Scampston Hall, Yorkshire. Both were excellent all-round naturalists as well as keen aviculturists. Meade-Waldo kept rather unusual birds such as Sand Grouse, Trumpeter Bullfinches, and Teydean Chaffinches, which he had himself captured in his travels in North Africa and the Canary Islands; and he kept also a number of owls of various kinds as well as other predatory birds. He introduced Mandarin Ducks to some



ponds in his woods where they bred and increased as wild birds ; and he was partly responsible for the introduction of the Little Owl, and showed me with much pride a nest of young in an apple tree stump in his orchard.

St. Quintin kept in his park a large collection of rare waterfowl, Great Bustards, and Cranes, as well as, in large aviaries, Ravens, Little Bustards, and Waxwings, while under more protection there were the smaller foreigners, Gouldians, Parrot Finches, and Painted Quails. These two naturalists were fast friends, keeping careful diaries of all country happenings, and exchanging their experiences by almost daily correspondence. I wish their diaries could have been published as they would have been worthy successors to that of Gilbert White.

The Rev. C. D. Farrar was Vicar of Mickelfield, in Yorkshire, and possessed a very large garden aviary in which he seems to have bred almost everything he tried, and he managed to winter even the smallest successfully without artificial warmth. He was a prolific writer, but his articles often led to heated controversies, to the distraction of the Editor. When I was Editor later on, I had trouble with Mr. Farrar, and he wrote asking if he might call and see me, to which I readily agreed. From his previous writing one might have thought that this burly Yorkshireman, standing over six feet tall, might be quite dangerous, but, on the contrary, he was as gentle as a lamb and, in fact, quite charming. We parted the best of friends.

Then there was Frank Finn, at that time Deputy Superintendent of the Indian Museum at Calcutta, a man with a great knowledge of birds in general and Indian birds in particular. He wrote several books on birds, and possessed the most remarkable memory. And I must not forget Miss Rosie Alderson, an authority on foreign doves, who helped much in those early days of the Society.

Such is a brief outline of the foundation and early years of the Society. The last years of the nineteenth century. Fifty-four years ago. There were certainly some excellent aviculturists in those years, perhaps more who actually kept birds in any numbers than now, but I think there are probably more now who are interested in birds, even if they are too busy to keep them. In those days the Society held no meetings, not even of the Council, so it was difficult for the members to get to know one another. Now the Society holds regular meetings of Council, and we have the Aviculturists' Club which is a wonderful means of bringing the members together, as well as adding to their numbers."

*Mr. E. N. T. Vane.*

PARROTS IN ENGLAND TO-DAY  
(*Illustrated by projected Kodachrome transparencies*)

"The Psittacine birds in England to-day still reflect the results of the



ban on importation imposed in 1930. The raising, for nearly a year, of this embargo in 1953, permitted the influx of a number of Asiatic, South American and African species, but very few Australians came in. The least said about the manner in which these birds were imported the better. Thus, apart from these importations, the majority of the birds in our aviaries and zoological collections originate from well established home-bred stock. In all there are at least a hundred and fifty species or more represented, of which I have been able to obtain coloured photographs of a hundred or so and now propose to show you a selection from these.

Following Peters' Classification, of the six Sub-families of Parrots, three can be dealt with instantly, as we have only one representative, namely the KEA of the second Sub-family, the Nestors. The first, the Owl Parrots or Strigopinae are no longer in the country, and the third, the Pygmy Parrots or Micropsittinæ, have never reached our shores alive: I believe the nearest success was by Goodfellow as long ago as 1908. Returning to the Kea, a specimen is exhibited in the London Zoo, and of course, Mr. Sidney Porter, who made avicultural history by breeding these birds in 1947, still has some of them, and I believe is still hopeful of repeating his success. He is most emphatic that these are most intelligent and endearing birds, in spite of all that has been attributed to them.

The Loriinæ, which scientifically should be between the Nestors and the Pygmy Parrots, are mostly only found as single birds, or at least without any real breeding facilities. This picture is of a CHATTERING LORY, but there are also several Purple-capped, Black-capped, Black, Yellow-backed, Violet-necked, and possibly others. Among the Lorikeets are SWAINSON'S and FORSTEN'S, both of which have potentialities as breeders. Also there are Red-collared, Ornate and Scaly-breasted pairs. At Whipsnade is an exhibit labelled Green-naped, but I believe this is really Mitchell's or Edwards's. Well known, too, on the show bench are a pair of rare Musschenbroek's which were once in the Duke of Bedford's collection, but apparently unsatisfactory as breeders.

The next sub-family of Cockatoos is well represented, although few are accorded breeding conditions. The first picture is of a BANKSIAN cock who has a hen in the Parrot House, but no aviary and nest box to try with. There are also examples of the Palm Cockatoo, Funereal or Yellow-tailed Black, and in the Coronation Collection are a pair of Baudin's or White-tailed Black Cockatoos which have only been in this country once before, about forty years ago, and a point should be made to see these birds whilst here.

There are at least two pairs of Gang-Gangs which are regular breeders. I believe Mrs. Clark has two pairs now. There are several Roseates, the picture shows an ALBINO HEN and her normal mate,



taken last year at Woburn. There are also a number of these in the Coronation Collection.

Among the white Cockatoos we have specimens of the MOLUCCAN, or Salmon-crested, Triton, Blue-eyed, Slender-billed, and Bare-eyed ; there is at least one true pair of Great White Cockatoos belonging to Pat Maxwell at Whipsnade, but their skill and ability as wire cutters make them a difficult subject to be kept in large breeding quarters. There are many SULPHUR-CRESTS of the Greater, Lesser, and a few of the Timor species, but few people can provide the space or a sufficiently strong aviary to permit breeding ; some however do. There are quite a few good breeding pairs of LEADBEATER'S which is probably the loveliest of them all. During the relaxation of the ban some Citron-crested or Orange-crested pairs were imported, and efforts are being made to induce these to breed. Of the smaller species we have some GOFFIN'S and DUCORP'S, but so far as I know none of these are potential breeding pairs.

The prolific COCKATIEL has maintained its numbers by being bred in aviaries for generations. Our established stock compared very favourably with the few imported specimens I saw.

Macaws again are large birds which few can accommodate in strong breeding quarters, and most specimens are zoological exhibits, such as the SCARLET or Red and Yellow, the GREENWING or Red and Blue, BLUE AND YELLOW, HYACINTHINE, LEAR'S. Attempts are made annually to rear some of these birds, but success is seldom attained ; it is peculiar that whenever a large Macaw does succeed, it is nearly always a hybrid youngster. Apart from the birds illustrated, we have specimens also of Military, Severe, and Spix. Among the smaller species there are pairs of Illiger's and NOBLES which are being given breeding opportunities. My own Nobles have bred every year since their initial effort, and there must be a number of potential breeders about.

The position over Conures is rather indefinite. With the exception of Mrs. Clark's QUEEN OF BAVARIA'S, breeding stocks as such are still non-existent. A number were imported, but seem to have almost disappeared without gaining any footing. Although there are a number of old specimens still surviving in zoos such as Blue-crowned, Red-masked, Black-masked, etc., a few of the latter were imported along with some Jendayas, Half-moon or Golden-crowned. Then a number of St. Thomas were imported which were in fact not the rare species from that island, but the Yellow-cheeked from Guiana. These have not been bred, but efforts are being made to start them. There are also a few Cactus and related species. A few of the delightful little Pyrrhura Conures were also sent over, and it will be a great misfortune if we cannot establish the RED-BELLIED and WHITE-EARED. Mr. Prestwich has a small nucleus of the former which reared three



young last year, and in my own aviaries last year the latter hatched two young, which died when about five weeks old, and were still rather under-developed. This year they have also been disturbed by uninvited visitors, but they are trying again.

The few Patagonian Conures seem to have been unfortunate, and one definite pair at Whipsnade made a neat little hole in the roof of their flight and were never seen or heard of again. Possibly only two or three pairs are left, and so far they have not been reared.

I have no photograph yet of the Lineolated Parrakeet bred last season for the first time by Mr. Prestwich, who now has a small stud of these delightful little birds and hopes to repeat his success.

Three species of Parrotlet were imported, the Blue-wing, GUIANA and the Turquoise-rumped. These birds do not breed readily here, and we have never been able to start strains such as Mr. Enehjelm has done in Finland. A few pairs actually reared families, but there seems little likelihood of strains being firmly founded. The cock illustrated nested twice indoors with a hen in my aviaries, but no young were hatched, and the hen died on eggs before she was turned out into an outdoor flight as originally intended.

The Brotogerys genus came over in quite good numbers, particularly CANARY-WINGS. Odd White-wings and All Green turned up, and one consignment contained four Gold-wings which are probably the first and only importation of these birds into England. Mr. Prestwich is trying out these birds this year.

Pionus Parrots were also among the birds brought over as single specimens, and included Maximilian's, Red-vented, Sordid, but none of them took kindly to captivity, and few are still living. The only record of these birds breeding here is of the White-capped hand-reared by Mr. Yealland some years ago.

Amazon Parrots also arrived, but so far only the BLUE-FRONTED have been bred and a hybrid Blue-front  $\times$  Yellow-cheek. Breeding pairs (potential) are at present being kept in Blue-fronts, YELLOW-CHEEK, Cuban and Yellow-fronts. There are several odd specimens of other species kept as pets which might one day be bred from. There are, for instance, several ORANGE-WINGED, Salvins, Sallés, Red-topped, Green-cheeked, Festive, Mealy, to name a few.

Of the delightful little Caiques, pairs of both WHITE-BELLIED and Black-headed came in. Whether these will eventually breed is of course highly speculative, but they are being given the chance to do so, as also are a pair of Hawk-headed.

From Africa we have a number of SENEGAL PARROTS, including one or two of the Red-bellied variety. In the Zoo is a very nice ORANGE-HEADED GOLD COAST PARROT, very similar to Aubrey's Parrot. And Mr. Prestwich has a specimen of the *cryptoxanthus*,



possibly the only one ever imported. The Meyer's and Rüppell's are also represented in zoos.

Although there are many AFRICAN GREYS, probably there are less than a half dozen pairs from which serious attempts are being made to breed. Of course a few Timneh are also here, although their fond owners are possibly quite unaware that it is any different to the hundreds of other Greys.

At Whipsnade, Pat Maxwell has kept the only specimen of PESQUET'S PARROT in good health and condition for nearly two years. Quite a friendly bird if unusual.

There is at least one pair of RED-SIDED ECLECTUS which gained for Mr. Indge the medal last year for being a first breeding. These birds have now changed ownership, but I understand they are still trying to breed again. I was only able to get the hen to pose for me.

The Asiatic Psittacula are well represented, mostly with well established breeding strains in the RINGNECK of which I have only one photo of the normal bird, a hen, here shown with a lutino cock. A better illustration of the LUTINO COCK follows. Then there are the BLUE BIRDS which the late Duke had gone far to establishing. This pair are still immature, being only two years old, but the following illustration is of an ADULT COCK taken last year at Woburn. Here I was also able to get a picture of a YELLOW PLUMHEAD cock, not a lutino, although there is one of these at Keston. There are quite a number of possible breeders, although they are not very reliable regularly in this direction.

My own success with the MOUSTACHE last year has unhappily not been repeated. Experience has proved they are exceedingly prone to pneumonia and the original pair have died. Others are still trying to breed from good pairs, however. There are also a few Alexandrine's and Layard's, and at least one Long-tailed and a hen Malabar. One or two pairs of Derbyans, too.

PRINCESS OF WALES' are well established, and we were able to reinforce our stock with a few imported specimens. Only a few pairs of ROCK PEPLARS and BARRABAND's are still here, but at least some of these breed regularly.

We still have a few pairs of CRIMSON-WINGS, and there are two cocks at least of the TIMOR ISLAND variety, this one is in the Zoo here.

I believe there are only two pairs of the lovely GREEN-WING KINGS\* left. One breeds fairly regularly at the Zoo, and our President has a pair: my own died over a year ago of old age. Most of the KINGS are old birds, but again we were able to get a few of these magnificent birds over recently.

\* On the visit to Foxwarren on Saturday, 19th June, we were able to see two pairs of Green-wing Kings at the President's Garden Party, one of which had two youngsters on the point of fledging.



There are two of the Malay Blue-rumped Parrots in the country, unfortunately both are males. This bird seldom is imported, and appears to be difficult to acclimatize yet easy to keep once accustomed to captivity.

The Lovebirds ought to be safely established considering the numbers of Fischer's and Masked that were brought in. I wonder if they are. The RED-FACED, of course, has not yet been bred in captivity in spite of near successes. This is a colony of some thirty birds with which Mr. Prestwich is trying to accomplish this difficult task. There are not a lot of PEACH-FACED, but several pairs are now rearing regularly. Several FISCHER's have been bred, but not as many as should have been, when one considers the numbers that came in. The same remark applies to MASKED, and we now have quite a few of the BLUE variety, although these do not appear to relish this climate, and who can blame them after this year's effort at summer. The Duke had a few NYASAS, including a LUTINO cock. Only green birds have been reared so far here, but we are still trying. A few Abyssinian pairs exist, there are no Madagascars or Black-cheek. Swindern's have never been imported.

The Hanging Parrots are not very popular as aviary subjects. The Vernal came in in quite considerable numbers, but were not good sellers, and the dealers soon dropped them, besides which they are not likely to breed. The lovely little BLUE-CROWNED also reached us, but only cocks.

This brings us to the Australian Broadtails, which have been well established as home bred stock for many years. Fresh blood has been acquired recently, and we have pretty good stocks. Unfortunately, when the ban was lifted, I concentrated on the rarer species, and disposed of many of my old Rosellas, now difficult to replace with birds of the same reliable standard. However, we have several fine PENNANT's, GOLDEN-MANTLES, STANLEY's, and MEALIES. BROWN's are rare, and seldom reliable breeders. There are also one or two pairs of Bauer's and several good Barnard's.

The Red-capped or Pileated Parrot, called Western King in Australia, seems to be on the way to developing a strain at Keston, one pair having reared almost twenty young. Others are now trying their hand with this lovely bird.

Blue-bonnets are almost non-existent now. I had a pair of YELLOW-VENTED, but the hen died soon after importation, and these two NARETHAS from the Duke's collection are both hens and probably the only ones ever imported.

The RED-RUMPS are pretty well established, and many good birds are reared annually. The yellow variety does not seem to be doing so well lately. MANY-COLOURS breed fairly well here, and again their



blood has been reinforced. There is a pair of HOODED, but unfortunately they are not together.

Of the Grass Parrakeets, BOURKES have been well established for years. These also have had a few newly imported specimens. ELEGANTS are also well established with a limited number of breeders. TURQUOISINES have been re-established, and given reasonable good fortune these should be on the increase soon. The same applies to Splendids, although I would like to see more of these birds in the country, as our stocks are exceedingly low.

That I think records the position of the Parrot-like birds in England to-day, and it goes without saying that the Budgerigar, the last of the family to be mentioned, will most probably manage to hold its own as an aviary bred species!"

(*Note.*—Colour transparencies were shown of all species given in capitals.)

The meeting then adjourned for lunch and reassembled at 2 p.m.

*Mr. Peter Scott (Hon. Director of the Wildfowl Trust).*

#### THE NE-NE OR HAWAIIAN GOOSE

(*Illustrated by colour film*)

"At the invitation of the Board of Commissioners of Agriculture and Forestry of the Territory of Hawaii, the Wildfowl Trust agreed to take an active part in the attempt to save the Ne-ne or Hawaiian Goose, *Branta sandvicensis*, from imminent extinction. In 1951, only thirty-two individuals were known to be surviving. Up to this time the Hawaiian Goose in the wild state had occurred, so far as is known, only on the island of Hawaii, with the exception of a few isolated records on neighbouring islands. Less than a century ago 25,000 of these birds are believed to have existed, and the diminution is thought to be due to several causes, besides their destruction by the islanders for food, during the flightless moulting period. In addition to feral cats, dogs, and pigs, the mongoose, which was introduced to kill the rats that were damaging the sugar cane, helped to decrease the numbers of all ground nesting birds by destroying nests, eggs, and young. The few remaining geese which are still in the wild state have been seen on the slopes of the 13,700 feet volcano Mauna Loa and its neighbour Hualalai. These lava slopes are in general character a kind of moorland—moss and lichen covered rocks, a few trees, various grasses and other plants, some of them bearing berries which are eaten by the geese, a favourite being the Ohelo—*Vaccinium reticulatum*. Here and there the lava is impervious enough to hold water, so that there are some shallow pools, but no large areas of water.

In 1950 the Trust sent its Curator, Mr. John Yealland, to Hawaii in order to advise and assist in the establishment of a breeding station for propagating Ne-nes at Pohakuloa in Hawaii. Mr. Yealland





[D. Farrell

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NE-NE OR HAWAIIAN GEESE.

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successfully raised a brood. On his return to England he brought a couple of Ne-nes as a gift from Mr. Herbert Shipman, of Hilo, to whose interest the species owes its existence to-day. Both of these laid eggs in March, 1951. A gander was at once flown from Hawaii, and during the breeding season of 1952, nine young Ne-ne goslings hatched, all of which survived. In the same year three were raised at Pohakuloa, and the total number of birds known to exist was forty-six. In 1953 a further four goslings hatched at Slimbridge, and were successfully reared. This year, 1954, five goslings hatched, but only four have survived. Unfortunately one adult died, and two young birds which were lent to another breeder were poisoned by a disastrous accident, so the present total at the Wildfowl Trust is seventeen, a quarter of the world population of these birds, which is at present believed to be sixty-eight.

#### THE HIGH ANDES

(Illustrated by colour film)

Early in 1953, my wife and I made an ornithological expedition to South America. The first part of it was spent in the extreme south of Chile and the Argentine—the southern tip of Patagonia, and the island of Tierra del Fuego. The second half was spent on the Andean Plateau of Bolivia, not far south of the equator. Before leaving Buenos Aires we were able, in the nearby marshes, to study and film that obscure but interesting bird the Black-headed Duck, *Heteronetta atricapilla*, which is parasitic, laying its eggs in the nests of Coots, Night Herons, and Ibises. From Argentina we flew up into Bolivia, whose capital La Paz is 13,000 feet above sea-level, and from here we went by rail past the famous pre-Inca ruins of Tiahuanaco, to the port of Guaqui on Lake Titicaca.

The bird life of this lake is especially rich and interesting, because many of the forms are confined to the *puna* district or *altiplano*, although closely related to lowland species. These subspecies tend to be larger than their counterparts. The commonest ducks on the lake are the Puna Teal, the Sharp-winged Teal, and the Peruvian Stiff-tail. We also saw the Giant Coot, many Grebes, Cormorants, Night Herons, and waders, including Wilson's Phalarope on migration from North America. Some of the ducks were moulting and flightless, and we were able to catch a small number of Puna Teal and Sharpwings from a boat by dipping them out of the clear water with a home-made net when they dived. These birds are now established in the Trust's enclosures in Gloucestershire, and the Sharpwings have nested.

The main objective of this journey in Bolivia, however, was to see the beautiful Torrent Duck, *Merganetta armata*, which lives in the waterfalls of the Andean streams. For this purpose we travelled over a high pass near the great mountain Huaina Potosi (where on



a lake at 16,000 feet we saw a flock of Andean Geese), and down into the Valley of the Zongo, which finally drains into the Amazon. This valley is accessible because of a hydro-electric scheme, and it was in the River Zongo that we finally came upon a group of five Bolivian Torrent Ducks, *M. armata garleppi*. Although they could not be filmed at very close range, their behaviour was carefully studied, and hitherto unrecorded details of display and voice were noted. The films show the swimming capacities of these birds in the white water of the torrents, and some features of the display. They are believed to be the first colour films ever taken of this little known and fascinating bird."

*Mr. Walter Van den bergh (Director, La Société Royale de Zoologie d'Anvers).*

#### BIRD PROTECTION IN BELGIUM

*(Illustrated by films)*

"In this very short lecture I intend to give you a general idea of how Bird Protection has developed in Belgium in the last few years.

But allow me first of all to thank you for your kind invitation to address the Avicultural Society on the occasion of its Diamond Jubilee. Please do not consider it as a mere complimentary phrase, when I tell you that your invitation made me feel very much flattered.

I am glad to be here among friends who are in full support of an ideal, for which we still have to fight the first battle in my country. The celebration by your Avicultural Society of an imposing Diamond Jubilee proves that the subject of Bird Protection is not new in Britain. In Belgium it is only a growing idea and a very topical question at this very moment. This is the reason why I have chosen 'Bird Protection in Belgium' as subject for the speech I was asked to deliver here.

On Sunday, 13th July, just a few days ago, the 'Belgian Society for Bird Sanctuaries' inaugurated its very first bird sanctuary. This took place with a certain solemnity in the presence of representatives of several Ministers, the Lord-Lieutenant, many prominent people, and an attendance of more than one thousand enthusiasts.

This was the second year that the 'Union of Societies for Nature Conservation' succeeded in organizing what we call 'The National Nature Conservation Day', and we were glad to be able to offer the public a new nature reserve rather than words and speeches.

Members of the Press and of broadcast and the film journals were present, and have helped enormously in the promotion of nature reserves all over the country.

An intensive propaganda campaign has been launched during these last months. We cherish the hope that this will improve public opinion and will result in a better protection of nature, a protection of the animal habitats, and an increase of bird sanctuaries.



I expect you are wondering at the excitement in Belgium over so simple a thing as the very first small bird sanctuary, purchased by a Society.

I have a map of Britain, nicely dotted to mark the numerous and well managed bird sanctuaries, and I know we are shamefully behind in Belgium. This explains the stir over the event.

The idea of 'bird protection' has been successfully realized in your country for many years, and whenever a new bird sanctuary is added to your long list, it is quite a normal thing, a familiar event of little account!

However, conditions are quite different in Belgium, and it may be of some interest to you to sketch in rough outline the struggle for nature conservation in Belgium. First I will try to show you what the situation was three years ago, when the Belgian Society for Bird Sanctuaries was founded; next I will do my best to give you an idea of the present state of affairs and a glimpse of our prospects for the near future.

There has always been a great number of ornithologists all over Belgium: amateurs, bird watchers, semi-scientific workers, reporting upon migration and nesting, and ringing birds. Some of them co-operated with the Royal Institute of Natural History, others with our bird journals, *De Wielewaal* and *Le Gerfaut*, two publications that are evidence of their enthusiasm. There were also a considerable number of unambitious individual bird-watchers for whom wild bird life was just a thing of interest and who never decided to tackle a special problem.

These ornithologists recorded a steady decrease in both number and variety of many Belgian birds, and noticed the disappearance of several species from our country. They constantly called public attention to the urgent necessity of improving the actual Bird Protection Acts, and of supporting the conservation of wild animals and plants by protecting the very last natural wood-, marsh-, moor-, and coastland in our overpopulated land.

On the other hand, bird-catching has always been a deplorable hobby of the lower classes in Belgium, and too many politicians, who tick to their mandate, are afraid of alienating their electors by voting any new Bird Protection Bill.

Not one of our successive governments ever made a serious attempt to vote any funds for nature conservation nor for the protection of wild plants and animals in their natural habitat, and owners of natural landscapes can still spoil them as much as they like, for there is no act to put a stop to such vandalism.

In the meantime private societies for the protection of nature and monuments were created, and did their utmost to call attention to the urgent necessity for action, but they were voices crying in the



wilderness. Local authorities and ministers pretended to listen kindly and attentively, promised to do their utmost, but never took any action. The government never considered the purchase of nature reserves.

Eventually these societies came to the conclusion that there remained only one, but rather expensive, solution : to try to collect the money and purchase the menaced natural landscapes !

These societies for protection of nature deserve our warmest gratitude. Their sphere of action, however, is very large, and moreover they are so much pressed for money that they have had to limit their activities. They really did their very best to promote nature protection, but it only resulted in unsuccessful protests in the papers and in government circles.

The International Congress of Ornithology of 1950, in Upsala, indirectly brought a change for the better in this sad situation. Those Belgian ornithologists present suggested the foundation of a special society for the protection of nature, which would concentrate all activities on bird protection.

Architect Jan Jacobs actively pushed on the work, and he was assisted by Léon Lippens, an all-round experienced man, a first-rate ornithologist and a man whose voice carries weight. In 1951 the 'Belgian Society for Bird Sanctuaries' was founded. Through the kind offices of Dr. René Verheyen, the Society was invited by Dr. Van Straelen, president of the National Parks in the Belgian Congo, to establish the seat of the young society under the same roof.

This brought a sudden rise in prestige. A few weeks later, H.M. Queen Elisabeth of Belgium granted her high protection to the Society. Her Majesty invited Dr. Koch, who is well known in Britain, to make gramophone records of the bird-song in the Royal Park of Laeken, near Brussels. A copy of this beautiful collection of records, accompanied by a well illustrated handbook, has been sent by Her Majesty to many schools, and the remaining records are sold for the profit of a charitable institution.

So the new society started with good prospects and high hopes. It may be of some interest to relate the experience gained since 1951 and the results obtained.

Three years ago the Society still laboured under the delusion that a nice pamphlet could do wonders, that it would be able to draw government attention upon the shameful state of affairs, that print could awake public opinion, and that automatically thousands of enthusiasts would join and pay a small contribution to defray the costs of administration.

The pamphlet looked nice. It was a cry of alarm from end to end, and especially drew attention to the fact :—

—that in the moorlands : Ruff, Tawny Pipit, Black Grouse, Curlew, and Bar-tailed Godwit were getting very rare ;



—that in the polderlands, along the low rivers : Black-winged Stilt, Avocet, and Oyster-catcher were becoming scarce ;

—that in the marshes : the Bittern, and the Little Bittern were in danger ;

—and that along the sea shore : Plovers and Little Terns had already disappeared.

Twenty thousand of these pamphlets were distributed throughout the country in 1951. They were sent to friends, teachers, doctors, lawyers, readers of ornithological journals, etc. The result was disheartening. Public opinion was not ripe, and the total amount of subscriptions collected hardly paid the expenses of printing and postal charges !

In the meantime we grew aware of the fact that the little group of active members did not increase. Six people had to carry the load, and among the members not even a seventh bird-lover could be found to spare time to help the Society by practical co-operation.

At this very critical moment the Society by chance secured the valuable help of Mr. Herberigs, a very active ornithologist, who is at present the delegate of the Society. He was not afraid of paying an endless number of annoying visits to people all over the country who might possibly join. These interviews proved to be a success, and in 1952 a change to another method of collecting subscriptions was made. Instead of trying to gain a vast number of ordinary members, efforts were concentrated upon securing an increase of protecting members, who pay annually 1,000 F. and up.

This new method succeeded wonderfully with the help of Mr. Herberigs' persuasive power, and soon a considerable number of protecting members joined.

About that time circumstances were such as to be favourable to the idea of nature reserves ; one of those psychological moments which are very difficult to explain, but which could be expected just then, as the papers had done their very utmost to support and push the idea. The leading part was taken in the country by the ' Friends of the River Ourthe ' who tried to prevent the construction of a barrage, that would spoil the most beautiful valley of the Ardennes (a battle, which I regret to say, they lost !)—by ' The Friends of the Forêt de Soignes, south of Brussels, through which the government planned to build an autostrade or main motor-road—by Mr. Léon Lippens, who drew the attention upon the beautiful coastal area ' Het Zwin ' after the inundation of 1953—and by the ' Society for the Protection of Nature and Historical Monuments ' which supported the conservation of a large moorland north of Antwerp.

The stream of preservation propaganda was given enough force to arouse public opinion from apathy, and in two years the Belgian



public became interested in the question as a result of all the publicity that had been given.

I do not know how politicians behave in Britain, but the leaders of the people in Belgium often prefer to follow the track of their voters instead of guiding them. But as things are at present, politicians can no longer ignore such ideas as protection of nature and bird sanctuaries. There is good hope that they will soon show their voters that they are still following the crowd, and that they will prove to the government that they can keep abreast with general opinion.

All this contributed to create a favourable atmosphere in 1953 for the activity of the Belgian Society for Bird Sanctuaries. About that time a marshland called 'Snepkensvijver', beautifully situated along a main road, was going to be parcelled out for building summer houses. This splendid natural breeding place for many birds would disappear for ever, and once again the authorities did not move.

The Society forced the issue. Within a few weeks, 1,000,000 F. (about £7,150) was collected by means of a very few subscriptions, ranging between 1,000 and 100,000 F. This put the Society in a position to buy the land, and so become owner of its first bird sanctuary.

We still very much regret that the new Bird Protection Bill to restrict bird catching, which was brought in by the three political parties, was rejected in 1952. If the same bill had been introduced a few years later, the same assembly would certainly have voted for it, because public opinion is at present much more in favour of the question.

The actual problem of bird protection in Belgium can be summarized as follows :—

During the last two years a successful attempt has been made to influence and educate public opinion about nature preservation and the protection of wild animals. The population now expects some practical results.

The Belgian Society for Bird Sanctuaries by chance started its activities at the right moment. In three years 800 members joined the Society, and the total annual contributions amount to 200,000 F. (more than £1,300).

The first bird sanctuary in Belgium was 'De Zegge', a marshland of 35 Ha. The Royal Zoological Society of Antwerp purchased the land for the purpose of establishing it as a bird sanctuary, and acted in close co-operation with the Belgian Society for Bird Sanctuaries, which manages this natural reserve.

Thanks to the zeal of Mr. Léon Lippens, who collected nearly all the money, the Belgian Society for Bird Sanctuaries was able to purchase 'Snepkensvijver', a marshland of 50 acres.

About sixty private estates have been declared as bird sanctuaries, and the owners co-operate fully with the Society.



All these quick and rather spectacular successes, however, do not produce the results that ornithologists might expect. The sanctuaries are badly managed, and there is still a serious lack of supervision, and too few investigations are made. This is because the number of our members, who really do co-operate and take an interest in practical field work is far too small.

It therefore has been decided to put a stop to declaring new estates as bird sanctuaries, till we shall have a larger staff of trained co-operators.

The actual private bird sanctuaries are still badly organized, but we want to follow the British example, and hope to be able to attack the problem squarely and well. We started with the protection of nesting areas of rare species, and we are advising landowners and training gamekeepers; we give information to bird watchers on useful subjects for research and investigation, and publish an annual Bulletin, etc.

I fear the very short film I am going to show you will not come up to your expectations. It has all been done in a hurry. We even had no time to complete the film with some pictures of real interest to ornithologists. This year spring was very late in Belgium, as was perhaps the case in Britain too. We had to wait till last week to film a few interesting nests, and I regret to say that the copies arrived too late to be inserted in this film. A film which claims to be about bird protection ought at least to show some rare nesting breeding birds, and I offer my apologies.

Please remember too, that we were pressed to produce a film on bird protection for the Belgian public. We know that our own people are critical on the subject of films, and we would rather show them high standard films, but as these require much time and money, we think it is better policy in Belgium at the moment to produce something that is not perfect, rather than nothing at all.

We must go on beating the drum every day, even when there is a hole in the drum and the drumsticks are broken. It is the big push that people expect now.

This method would not be suitable for Britain, so please try to understand this, and excuse the gaps in the film."

Mr. Van den bergh then showed the film which included pictures of the bird sanctuary "De Zegge", a marsh owned by the Royal Zoological Society of Antwerp, in winter. The water was quite overgrown with vegetation, and the film showed how some open water was obtained and so the territory made more suitable for water-birds.

Nest-boxes were made in schools, and the boys offered them in May to the Director of the County Park, which was declared a bird sanctuary.

Some pictures of the bird sanctuary "Snepkensvijver" which



was purchased by the Belgian Society for Bird Sanctuaries, were taken in winter, others in spring. Attempts were successfully made here to improve the conditions for the very large breeding population of birds in this rather small area. More than one thousand Black-headed Gulls are breeding here this year. The white cloud of birds circling over their breeding-place is a very impressive sight. Besides this great number of breeding gulls, forty-eight other species of birds were breeding in the same habitat, and Mr. Van den bergh said he regretted that he could not show some of them. The Bittern and its nest was filmed, but this was not ready in time to be included.

Mr. Van den bergh then said :—

“ From all this we may conclude, that Bird Protection in Belgium has not passed its teething troubles.

The first obstacles, and most heavy ones, have been removed.

New members join every day.

No doubt, many of them will grow to active co-operators, who will turn bird protection into a reality.

Britain showed the way. We follow in her footsteps.”

The meeting adjourned at 4 p.m. for tea in the Library of the Zoological Society, and later a sherry party was given by the Editor of the AVICULTURAL MAGAZINE, Miss Barclay-Smith, at her house.

The meetings were resumed on Friday morning, 18th June, at 10.30 a.m., when *Mr. G. T. Iles*, Superintendent, Belle Vue (Manchester) Zoological Gardens, showed a colour film entitled “ Fine Feathers ”. Mr. Iles gave a running commentary as he showed his film, which depicted beautifully plumaged birds in the Belle Vue Zoo, with other bird scenes from Clères and Vincennes. The film ended with a sequence in lighter vein, which showed the various ways in which feathers are utilized, beginning with the wonderful head-dress of the Red Indian.

The following papers were then contributed, illustrated with lantern slides :—

*Mrs. Belle Benchley.*

#### BREEDING THE OCELLATED TURKEY AT THE SAN DIEGO ZOO

“ In 1946 several of the American Zoos joined in an effort to obtain breeding stock of the rare Ocellated Turkey of Central America by contributing funds to pay the expenses of a collector of experience. Each Zoo was to receive for the contribution at least one pair of the turkeys, if any were obtained. The collector, an experienced breeder of waterfowl and gallinaceous birds, reached the United States the





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OCELLATED TURKEY.

Photograph : Zoological Society of San Diego

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during the last two years because the original pair are still productive.

We have been able to place a number of the birds in American and European Zoos as well as the Agricultural Department of the University of California. We feel especially hopeful of saving this rare bird, by placing any large surplus of these birds in the collections of some of the most successful game bird breeders of California and south-western United States where they are removed from the public contacts and other difficulties which face those who maintain public exhibits.

I am happy to report that those we sent to European collections, especially at Clères and Rotterdam, are doing well and promise to provide specimens for European Zoos and breeders, and we feel that we have been more than justified in resorting to the expediency of artificial insemination in our efforts to insure the continuance of this magnificent bird, at least in captivity."

Mrs. Benchley showed slides of the adult birds, the egg, chick just hatching, and a series of the chick at 4 days, 14 days, and 28 days old respectively.

Mr. Kenton Lint, Curator of Birds, Zoological Society of San Diego, wrote a full account of the successful breeding of the Ocellated Turkeys in Captivity, which appeared in *Bulletin* No. 27 of that Society. His paper contained the following summary in tabulated form of the experiences at San Diego Zoological Garden from four successive successful years, the first two of which depended entirely upon artificial insemination, the last two being the recordings of the success with only natural matings from two year old, zoo bred cocks.

#### SUMMARY

1. The Zoological Society of San Diego has hatched and raised the first Ocellated Turkeys of Guatemala, Yucatán, and British Honduras, by use of artificial insemination in the United States.
2. On May 21st, 1948, the first insemination was made by Dr. Frederick W. Lorenz, Poultry Husbandry Division, University of California, Davis, California.
3. Fourteen fertile eggs resulted between May 21st-June 4th, 1948.
4. The first Ocellated Turkey poults were hatched June 20th, 1948, and fourteen poults were subsequently hatched.
5. The period of incubation was twenty-eight days.
6. The eggs are similar to the domestic turkey egg with larger spots.
7. The average egg weighed 47.19 grams and measured 60.76 × 44.2 mm.
8. The Ocellated Turkey hen at the San Diego Zoo laid thirty-seven eggs during the nesting season in 1948.
9. Five Ocellated Turkeys were raised to maturity in 1948.



10. On May 13th, 1949, the insemination was made by Dr. Lorenz for the second year with the original pair.

11. Twenty-nine eggs were laid between May 12th-June 12th, 1949. Sixteen Ocellated Turkeys were raised to maturity in 1949.

12. In 1950, nine Ocellated Turkeys were raised through natural matings from second generation zoo-bred males.

13. Eleven Ocellated Turkeys were raised to maturity in 1951, without the use of artificial insemination.

14. Forty-one Ocellated Turkeys have been hatched and raised by the Zoological Society of San Diego in four years.

15. May has been the breeding month for Ocellated Turkeys in San Diego.

16. Eggs are incubated at the temperature of 99° F.-100° F., for the first three weeks, and 101° F. for the fourth week, with a humidity of 87-88 per cent.

17. During the first four weeks the poults lived exclusively on insect food, chiefly cockroaches and mealworms.

18. At five weeks poults began eating turkey starting mash, canary seed, millet seed, greens, bread crumbs, egg yolk, and insects.

19. Adult Ocellated Turkeys are fed green oat pellets, canary seed, millet seed, milo maize, bread, egg yolk, every form of greens, and ground meat. Oyster shell is added during the breeding season.

The official bulletin of the Zoological Society setting forth these facts is available on writing to the Zoological Society of San Diego for the Bulletin No. 27, by Kenton C. Lint. For information on artificial insemination application should be made directly to the University of California, College of Agriculture, Division of Animal Husbandry, at Davis, California, U.S.A., attention of Dr. Frederick W. Lorenz.

#### CONTROLLED BREEDING OF ANDEAN CONDORS

"Breeding of the Andean Condor has occurred in several instances in Zoos displaying a mature pair. Therefore, the story of mating them at the San Diego Zoo is of importance only because of our experiments in increasing the breeding rate of these magnificent birds. These experiments have been carried on during a ten-year period with the hope that if we succeeded in fulfilling our calculations we might be able to change the dismal and hopeless destiny of a bird dear to the heart of every "Californian", the California Condor. Unfortunately, a pair of these birds has never been housed in any Zoo, all those in captivity most unfortunately having been females.

The breeding pattern of both species of Condor is one young bird at two-year intervals, for a yearling bird is still dependent upon the parents for food and protection, due to slow physical development. In addition to this is a discouraging rate of reproduction, for the



Andean Condor requires eight years to reach productive age, and while it has not positively been established, it is agreed by most authorities that it is the same with the California Condor. Practical conservationists have established that the likelihood of survival of rare species depends greatly upon very definite facts in the pattern of reproduction. First, the balance between the sexes in existing specimens and their mating pattern, whether monogamous or polygamous ; second, an important feature is the age at which they reach productive maturity ; third, the number of offspring produced annually and fourth, length of intervals between breeding periods. On each of these the California Condor, like its next of kin the Andean bird, has a poor success ratio. The breeding age is accepted as seven or eight years. The California birds have no identifying sex marks. Therefore, the ratio between sexes is completely unknown, and the number of known breeding pairs among the estimated number of birds is ridiculously low. Finally, the breeding speed is one egg laid at intervals of two years. This stimulated our interest in making a systematic study of the Andean Condors breeding in a huge flying cage among a mixed group of eagles, kites, and small vultures.

The first egg laid, after a rather long and very spectacular courting display, was misshapen and rough and was broken by the hen about the sixth day. But fortunately she laid another within a few months. From this there hatched out a fine, sooty-coloured chick, which could be sexed the day it was hatched because of the small comb which is present only in the male of this species.

The baby developed very slowly. Feeding and other forms of care were shared by the parents, as the incubation had been. The baby did not emerge from the nest until it had grown to be almost as large as its parents, though still somewhat shaggy and a dull dark grey instead of the shiny black of the adult. The care of the young bird continued until it was a year old. A normal mating season was skipped. In fact, it demanded attention until well into the second year, as it did not fly, but used its wings only to aid it in hopping about the imitation cliffs and ledges of its huge cage. The spring before it was two years old, however, the parents began their mating display, and on almost the same day as before the egg was deposited and the second incubation period ensued. The Zoo decided that we could afford to make an experimental study of this second bird, feeling sure that our pair of Condors would not be disturbed by our activities. And so, when the bird was ten months old it was removed from the cage. At first he sulked, but soon began to eat greedily whatever food he was offered.

The pair of adult birds, relieved of its care, almost at once began their mating display and laid an egg in due time which, upon hatching, turned out to be a female. The parents raised this second baby.





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[*Photograph: Zoological Society of San Diego*

ANDEAN CONDOR.

[*To face p. 126.*





[Photograph: Zoological Society of San Diego]

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ANDEAN CONDOR.



We had doubled normal production of Condors by raising two in two years. However, we felt that perhaps even greater speed in raising Condors might be necessary, for more and more discouraging reports regarding California Condor scarcity were brought to the Zoo by men actively concerned with wildlife preservation. Therefore, when the Condors laid their first egg in the following May, we took the egg away to be hatched in the incubator. In about thirty days after the first egg was laid, a second egg was deposited in the nest. This we left with the parents for incubation. Both eggs hatched and we raised two Andean Condors in one year, one without any aid from the parents.

The hand-feeding of a baby bird of prey, normally fed by regurgitation, is difficult, requiring much time, study, and real imagination, but we felt a good deal of pride in having produced four young which normally would have been the product of four pairs of birds in two years under normal wild conditions.

When we were able to repeat this performance for one more year we made no further efforts and the pair returned to their normal breeding pattern.

We wrote to the authorities in charge of wildlife in California, setting forth the results of our experiments with the Andean Condors, and calling to their attention that the few breeding California Condors in a sanctuary surrounded by thickly populated areas had little chance of survival through the mere setting aside of a proscribed area in which the birds could nest without interference of man.

We offered to turn our enormous cage over to the project of increasing the numbers of the California Condors. We did not ask for a permit to trap, but offered to take and care for any Condors the State could furnish. This came before the Fish and Game Commission, a non-political body concerned with such projects, and they told us they would prefer to give us a permit to trap a pair of Condors. Immediately, to our amazement, those organizations supposed to be concerned with preservation of wildlife, while admitting that the birds apparently were decreasing under their programme, violently opposed this permit or the caging of any Condors, and refused any request even for us to enter the sanctuary which had been set up in the area of the five or six known pairs of nesting Condors.

In spite of this opposition we asked for and received the permit to trap a pair of Condors outside the sanctuary any time except during the mating season. Opposition continued from these organized groups, but during several months in which our permit was in existence, weather conditions and scarcity of birds in areas to which we could have access prevented successful trapping. Finally, the Audubon Society which has for its object preservation of wild birds, brought enough political pressure upon the State Legislature to



squeeze through, during the closing hours of the session, a bill cancelling all permits to capture California Condors, and so we and those who share our desire to find a solution to the problem of real wildlife preservation, were stopped without any opportunity to make an active, positive approach to one of the most tragic and discouraging chapters on preservation of a rare species that is taking place in the world."

*Mr. R. G. Kirkham* then gave a short account entitled "Some Birds in Australia", illustrated by colour film taken during his recent visits to Sir Edward Hallstrom's estates and the Taronga Park Zoo.

The morning closed with the following paper:—

*Monsieur Jean Delacour.*

#### POST-WAR PHEASANT BREEDING IN EUROPE AND AMERICA

"European collections of pheasants were at a low ebb just at the end of the last war. Only a small stock of some rare species remained in England, at Leckford, and in Belgium, at Beez. Mr. Spedan Lewis, with the help of the late Miss Chawner and of Mr. Milligan, had saved a few pairs of Temminck's Tragopans, Mikado Pheasants, Grey Peacock Pheasants, and a few others, while Mme. Malisoux had Satyrs and Blyth's, Tragopans, Greys, and Palawan Peacock-Pheasants. Prof. Ghigi still had birds at Bologna, and a number of pairs of the commoner species were to be found here and there. In America, however, pheasants were still plentiful and soon many found their way to Europe. The pheasantry at Clères was replenished by consignments from England and from America and so were several other continental collections.

The situation after nearly ten years has greatly improved, although importations of wild caught birds have been few. Several species however have come on several occasions: Palawan Peacock-Pheasants and Japanese Copper Pheasants have reached California; also a few Malay Argus and Crested Firebacks. From India came Satyr Tragopans, Koklass and Impeyan Monals. But the number of birds bred in captivity both in America and in Europe is constantly increasing. They sell readily and there is no doubt that the taste for pheasant keeping is also increasing, particularly in America and in Continental Europe. This is not the case in England where practically only two collections exist at the present time, at Leckford, at Whipsnade and in London (Zoological Society).

It is a curious fact that pheasant breeding has always been a neglected branch of aviculture in Great Britain while bird-keeping generally has long been more popular and more successful there than perhaps anywhere else, although one must remember that more species



have been reared in captivity for the first time at the London Zoo, over a hundred years ago, than at any other place.

Belgium and Holland have very fine collections at present, mostly private ; but the excellent Rotterdam Zoo has greatly contributed to the promotion of pheasant keeping by importing several rare species and by rearing them in special secluded quarters, an example that other zoological gardens should follow.

There still are a number of private pheasant breeders in France, where the market for birds is excellent. The fairly large numbers reared at Clères every year fall, by a long way, short of the demand. The same is true of Italy.

Pheasant keeping in America is continually progressing. Not only the American Pheasant Society, national in scope, but several local clubs and groups, are active, and the number of birds reared each year is considerable throughout the country. The largest and finest collection to-day is that of Mr. R. H. Gibson at St. Helena, California, but there are many others, some very rich. The rarer species now reared in the United States include Malay Argus, Palawan, Gray and Germain's Peacock-Pheasants, Imperial, Edwards, Bel's (Berlioz), Mikado, Elliot's, Cheer Pheasants, Malay and Siamese Firebacks, Green and Sonnerat's Junglefowls, Satyr and Temminck's Tragopans. Blue Eared-Pheasants are plentiful and there is a fair number of Brown, which unfortunately are not breeding so freely as in the old days. Spicifer Peafowl are common in the west. White Eared-Pheasants are raised each year in small numbers, but their situation is precarious. Some have been crossed with Blue and the three-quarter bred birds are very similar to pure white. Perhaps this introduction of new blood may save the stock, which is not likely now to be soon renovated by imports from Western China. A few Bornean Crested Firebacks remain, but none has been reared in some years. No Copper Pheasants have so far been bred from the stock of birds recently imported.

There are just a few Cabot's Tragopans now in the United States, in England, and in Holland, and it is hoped that this beautiful species may soon be re-established, as it was one of the commonest in captivity. As to Blyth's, they are reduced to one pair, unfortunately so far infertile, in Mme. Malisoux's collection."

The meeting adjourned for lunch at midday, and resumed again at 2 p.m., when the following papers were contributed :—

*Mr. K. A. Norris.*

#### BIRDS OF BRITAIN

*(Illustrated by coloured slides)*

Mr. Norris's talk was designed to give the visitors from overseas an



impression of species more commonly to be found nesting throughout the British Isles, and the illustrations were divided into four groups :—

1. The small perching birds.
2. Birds of prey.
3. Waders.
4. Sea birds.

Species shown were Robin, Redstart, Whinchat, Wheatear, Spotted and Pied Flycatchers, Tree-Pipit, Reed-Bunting, Redbacked Shrike, Treecreeper, Green Woodpecker, Nuthatch, at an unusual nesting site in a stone wall, Dipper, Cuckoo with Hedge Sparrow foster-parent, and Kingfisher.

The birds of prey were represented by Tawny, Barn, Long-eared, and Short-eared Owls—a series of the latter to illustrate the remarkable change of expression of which this bird is capable, Kestrel, Merlin, Peregrine Falcon at the eyrie, and also of a trained bird “pluming” and tearing its prey, and the Common Buzzard at both tree and cliff eyries.

The waders depicted were Avocet, recently re-established as a British nesting species after a lapse of 125 years, Redshank, Curlew, Common Sandpiper, Snipe, Common Plover, Ringed Plover, Kentish Plover (now extremely rare as a nesting species), and Oystercatcher.

All the British nesting species of gulls were shown, Great Black-backed, Lesser Black-backed, Herring, Common, Kittiwake, and Blackheaded ; Common and Lesser Tern, Razorbill, Guillemot, and Puffin, and finally several illustrations of the Gannet colony on Grassholm, with an estimated population of 15-20,000 birds.

All the slides were of a very high standard and of perfection in colour rarely seen. The slides of the Peregrine tearing its prey and the Razorbills in flight were especially outstanding.

*Mr. H. J. Frith.*

#### BREEDING OF THE MALLEE FOWL (*Leoipoa ocellata*)

*(Illustrated by slides and colour film)*

Mr. Frith gave a detailed description of the extraordinary nesting habits of this little-known bird, which he has closely studied for a number of years. He showed slides of the inland scrubs of Australia which the Mallee Fowl inhabits, and gave an account of how it forms a mound of sand in which is incorporated a quantity of dead leaf material where the eggs are laid and left to be incubated by the heat generated. Mr. Frith showed that the greater part of the heat for the incubation of the eggs is supplied by the fermentation of organic material and for much of the season the sun's heat is of secondary importance. He explained how the birds attended to the mound



almost daily and, by opening and closing it, regulate the internal temperature of the egg chamber. Mr. Frith stated that this process usually results in a loss of heat and cooling of the egg chamber, which is contrary to the usually accepted theory that it causes an increase in temperature by means of solar heat. Only towards the end of the breeding season does it become necessary for the birds to make use of the heat of the sun, and they achieve this by removing the soil cover to within an inch or so of the eggs during the day. Mr. Frith then showed a colour film, the first ever to be taken of this subject, of the Mallee Fowl and their mound, the hen laying eggs, the position of the eggs when laid, and the birds attending to the mound. One amusing incident showed, at a moment when the actions of the birds were not completely synchronized, one of the pair scratching away the earth from the mound while the other was carefully scratching it in.

*Mr. J. J. Yealland*, Curator of Birds, Zoological Society of London, introduced and briefly commented upon points of special interest in a colour film of some Australian birds, kindly lent by the Australian News and Information Bureau.

Emus and their chicks, parrakeets, Black Swans and cygnets, the Laughing Kingfisher, the nesting of some of the small insectivorous birds, the male Brush Turkey scraping together the large heap of leaves forming the nest and incubator for the eggs, and the display of the male Lyre-bird were well shown by photography of a high standard.

*Lieut.-Col. C. L. Boyle* then gave an account of "Birds of Kashmir", illustrated by slides. The slides, which were all from photographs taken by the lecturer, were of very high standard, and well demonstrated the continued value of black and white photography.

At the close of the session, Mr. G. T. Iles again showed his film "Fine Feathers", also one taken at the Antwerp Zoo on the occasion of the meeting of the International Union of Directors of Zoological Gardens, in 1953.

The meeting adjourned at 4 p.m. for tea in the Library of the Zoological Society, and later a cocktail and sherry party was given by the Hon. Secretaries, Miss Kay Bonner and Mr. A. A. Prestwich, at the Rembrandt Hotel, South Kensington.

The programme on Saturday morning, 19th June, began at 10 a.m., when the following paper was given.



*Dr. William J. L. Sladen (Falkland Islands Dependencies Scientific Bureau, London, and Edward Grey Institute, Oxford University).*

### PENGUINS IN THE WILD AND IN CAPTIVITY

*(Illustrated by slides, colour film and sound records)*

With the experience of many years as director of the Zoological Park, Edinburgh, Gillespie (1932) writes, "of all the animals in a zoological park or garden, there is none more popular than the penguins." Yet these birds are almost unknown outside zoos because they are difficult to procure, expensive to keep, and more prone than any others to disease. Moreover, only a few hardy species breed successfully in captivity. The aim of every zoo would, no doubt, be to build up a healthy and contented community of breeding penguins under conditions as near as possible to their natural environment. Can a knowledge of the natural history of these birds studied in the wild in any way benefit them in captivity? I believe it can in many practical ways. In this paper I propose to give a very brief résumé of some conclusions made from a study in the wild, and then to discuss the possible practical applications of this knowledge to those in captivity.

#### A STUDY IN THE WILD

My knowledge of penguins in their natural environment is limited to seven species that breed in the Antarctic and Falkland Islands. The three Pygoscelid Penguins, the Adelie, *Pygoscelis adeliae*, Chinstrap,\* *P. antarctica*, and the Gentoo, *P. papua*, were studied closely between 1948 and 1951. Much of what follows concerns these, and particularly the Adelie.† The principles discussed, which are in very general terms, can I feel be applied to other species.

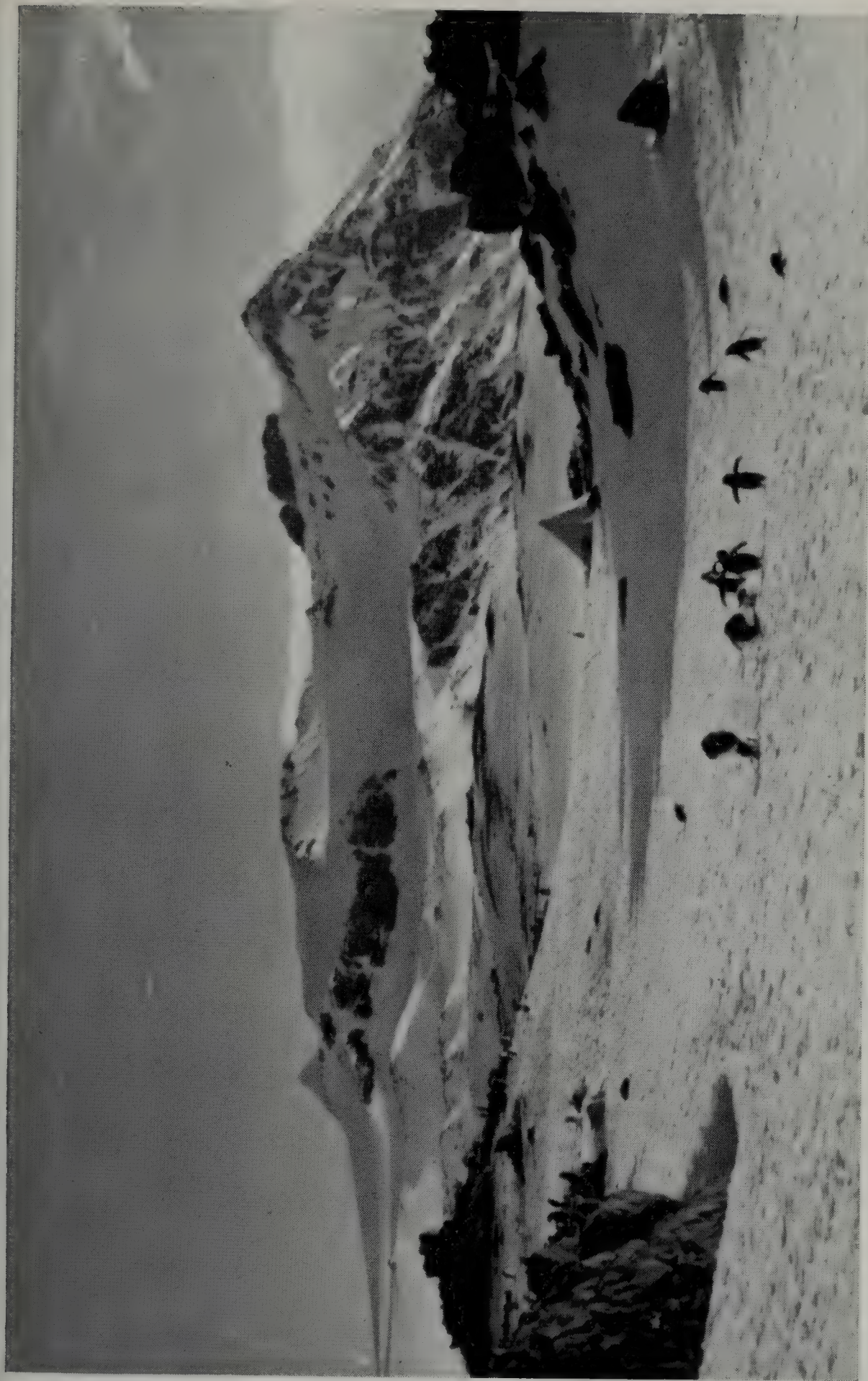
*Individual variation*, familiar to all who keep animals in captivity or study large samples in the wild, needs re-emphasizing. Penguins are gregarious birds, and differences in temperament play an important part in captivity.

*Age and breeding experience* do not appear to have been stressed enough in previous literature. An Adelie community can be divided into three main groups according to age and breeding experience; the "experienced" (or established) breeders; the "inexperienced" (or unestablished) breeders, and the non-breeders. On the whole, the "experienced" breeders return to the same nests and keep the

\* Often called the Ringed, Bearded, or Antarctic Penguin. I agree with Murphy (1936) that the South American name "Pinguin de Barbijo", equivalent to "Chinstrap Penguin", is the best vernacular name for this species.

† A summary of the breeding routine of the Adelie has been published (Sladen, 1953). A full account of the work on the Pygoscelid Penguins will shortly appear in the Falkland Islands Dependencies Survey Scientific Reports published by H.M. Stationery Office, London.





W. Sladen]

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THE OBSERVATION TENT AT HOPE BAY, GRAHAM LAND, 1948.

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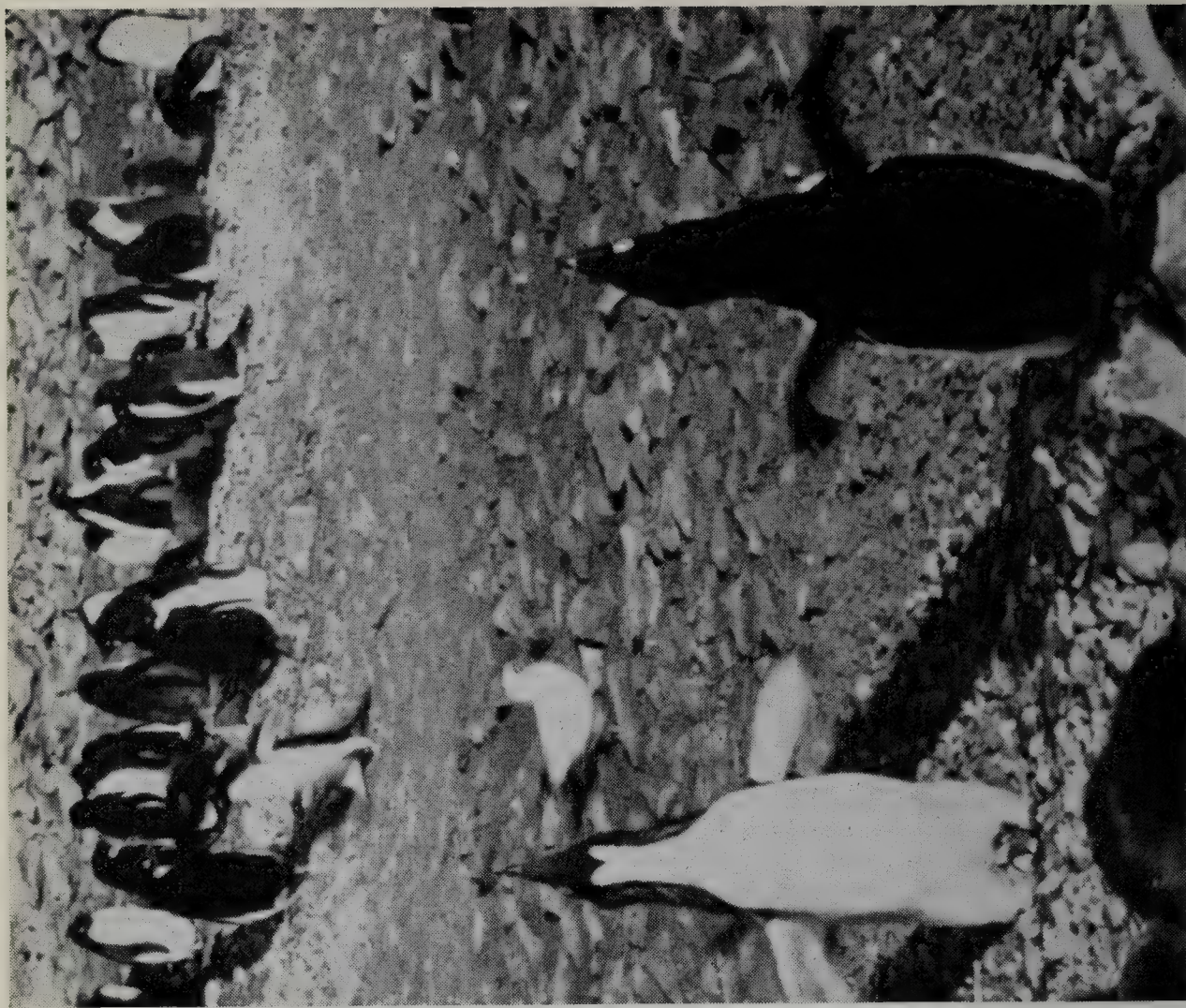
No. 2.



W. Sladen]

"INEXPERIENCED" BREEDERS

No. 3.



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TWO ADELIES ALONE AT THEIR NESTS IN ECSTATIC



same mates from year to year. "Inexperienced" birds, breeding for the first or possibly second time when two to four years old, first have to obtain nest sites and mates. To start with they may have to choose inferior sites such as the edge of the colony where the snow melts last and Skuas, *Stercorarius skua*, and Sheathbills, *Chionis alba*, can rob their nests more readily. Their behaviour differs from that of the experienced breeders. Courtship is more prolonged, fighting more frequent, breeding efficiency lower. The birds in Photo 2 were found on the edge of a colony. The female, while arranging herself more comfortably on her poorly built nest (compare with Photo 5) has inadvertently scraped away the egg with her feet. The Sheathbills behind are waiting for an opportunity to get at the egg, perforate it with their bill, and suck the contents. These little white birds, which do very well in captivity, know all about the penguins in their territory, and it is to nests such as these that they pay most attention. The non-breeders having no permanent attachments to territory, are seen in small parties walking around the rookery, or wandering far away inspecting rocky outcrops as much as 1,000 feet above sea level. A lone male might temporarily occupy territory, build a large nest, and keep company with a female. Next season this pair might come together again and breed for the first time. It is these "wanderers" and some of the unestablished "inexperienced" breeders which, under favourable conditions, will extend the range of the species by establishing colonies in new situations. They are also an important reserve population, ever ready to fill gaps. There is, of course, considerable overlap in these age groups due to individual variation. The only really satisfactory way to study these complexities is by long term research on marked birds of known age; a lead which has been given by Richdale (1951).

*Sex differences.*—The birds appear to be able to tell each others' sex, though to a human observer this is almost impossible. True, females are usually smaller and shier than males, but measurements and the temperaments of both sexes overlap to a considerable degree. One of the most reliable methods of sexing breeding birds is the one used by Richdale (1951), in which he compares the dilated, and maybe blood-stained, cloaca of the female soon after egg laying with that of her mate. Two birds seen copulating is another reliable indication of the sexes, though the possibility of homosexual and abnormal heterosexual relationships (especially in captivity) must not be ignored. In the Adelie additional evidence can be gleaned from breeding routine and courtship behaviour. For example, the male is always the first to incubate the newly-laid eggs, while his mate goes off to sea to feed. The ecstatic display (Photo 3) is confined to males during the early part of the season before egg laying and during incubation. These sex differences, though unreliable in other



species, do however suggest that an intimate knowledge of the breeding routine in the wild would help in many ways. The only certain way to sex penguins (other than by dissection) would thus be to mark them early in the breeding season and observe their breeding behaviour closely. By the time the eggs have been laid, it should be possible to tell in most cases which is male and which is female.

*Affinity*, a word understood in human social structures, but little mentioned in works on birds, has been emphasized by Richdale (1951) in his ten year study of marked Yellow-eyed Penguins, *Megadyptes antipodes*. One interesting example given concerns a female (A) who had an affinity for male (B), when (B) was already mated to another female (C) and she, (A), already mated to male (D). In September, 1939, just before the eggs were laid, (A) and (B) were seen "keeping company" at (B's) nest when the rightful female (C) returned to the nest and ousted (A). For this season and the next, both (B) and (C), and (A) and (D), remained together at their respective nests, but in the autumn of 1941, after her chicks had been reared successfully, (C) disappeared. (A) forthwith deserted (D) and joined (B) at his nest. But the story does not end here, for (A) and (B) remained together and bred successfully for the next three seasons, their union only being broken when (A) was unhappily killed in a rabbit trap. Also interesting is the fact that (A's) former mate (D) remained without a partner the season after (A) had deserted him. Moreover, during the six consecutive seasons that Richdale followed the intimacies of their lives, this male (D) had three different mates, and twice remained unmated. He was perhaps an "odd man out".

The Adelie, though generally more faithful to its territory and partners (Andrew and Roberts, 1951) than the Yellow-eyed Penguin, shows these discerning qualities as well. They not only take in their surroundings, but are most aware of the temperaments of other birds around them. The affinity of one bird towards another plays an important part in pair formation and in other social relationships in the breeding area.

*Breeding routine* varies much from species to species. Only a few points which have practical application in captivity will be mentioned.

(1) *Fasting periods*.—Probably all Penguins fast during the moult, and may lose as much as 40 per cent of their body weight. The Antarctic species seem to be the only ones that fast for really long periods during the breeding season. The male Emperor, *Aptenodytes forsteri*, fasts the longest, eating nothing for at least sixty days (Stonehouse, 1953) and probably longer, during incubation. The Adelie comes next. Once arrived at the beginning of the season, it will not return to sea to feed until the eggs have been laid, and then it is the female that departs first, leaving the male alone. It is only when the





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ADELIES, LIKE MOST OTHER PENGUINS, NEST CLOSE TOGETHER IN CROWDED COLONIES.  
[To face p. 134.



No. 5.



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ADELIE PAIR AT WELL-BUILT NEST.

No. 6.



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GENTOO PENGUIN WITH CHICK AT ITS NEST OF STONES  
AND OCCASIONAL BONE.

[To face p. 135.



female returns recuperated that the male can break his fast. The duration averages forty days (Figure 1), and his weight, starting at about 6.5 Kgm., will drop to about 3.5 Kgm. A fortnight at sea, however, is long enough for this bird to regain most of its lost weight.

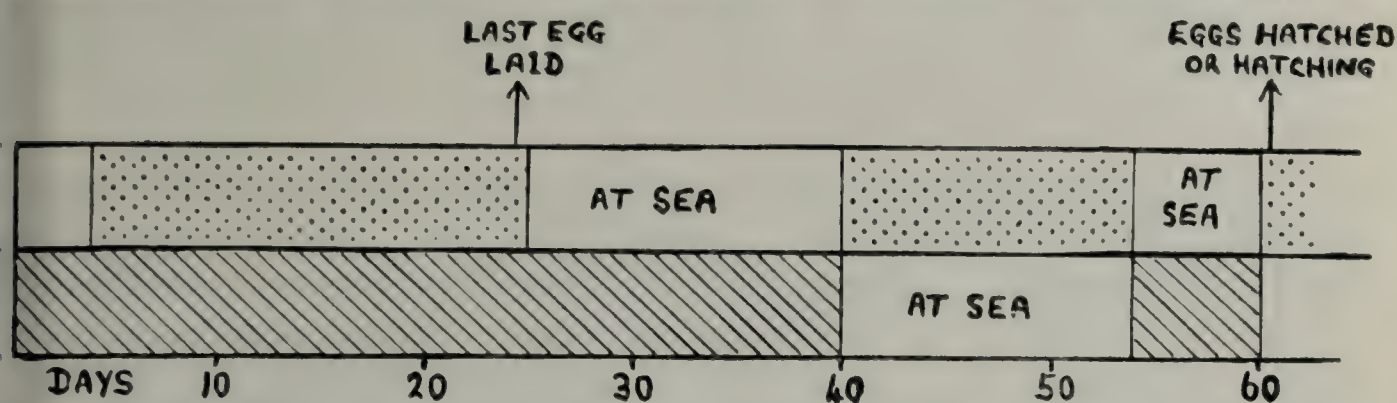


FIG. 1.—DIAGRAMMATIC NEST-HISTORY UP TO HATCHING OF EGGS MADE FROM THE AVERAGES OF SEVEN MALES AND SEVEN FEMALES RINGED AT SIGNY ISLAND ON 17TH AND 18TH OCTOBER, 1950.

Male fasting periods at nest (hatched); female (dotted).

Note:—The first birds observed back at the rookery were seen on 8th October, so the first fasting periods may be slightly longer than stated.

(2) *Nest sites and nest building*.—Some penguins, for example, the Magellanic, *Spheniscus magellanicus*, and Black-footed, *S. demersus*, build their nests in burrows. Of the majority that lay their eggs above ground, the King, *Aptenodytes patagonica*, and Emperor are the only species that do not build a nest. The others build with the materials most easily available. Thus, in the Falkland Islands the Gentoo builds its nest of grass and twigs of "Diddle-dee", *Empetrum rubrum*, whereas in the Antarctic, where there is almost no vegetation, nest material is confined to stones (Photo 6) and the occasional bone of their dead companions.

(3) *Rearing Chicks*.—This routine is shared by both parents, one guarding the chick (Photo 4) and feeding, while the other returns to sea to collect more food. Feeding is at intervals of one or two days, the chicks' stomachs having a great capacity for holding the food regurgitated to them. When the chicks are too large for guarding, the parents leave them to look after themselves and are both away at the same time collecting food. Visits then become more irregular. Most of the species that breed close together in big colonies, such as the Adelie, Chin-strap, Emperor, and King, have what is known as the creche system where the chicks group together in large numbers up to two hundred or even more. I believe this is chiefly for protection from predators, and in particular from the Skua. This bird will attack and kill any chicks that are isolated from the creche and alone. Another factor is protection from the cold, the importance of which has been emphasized in the Emperor by Stonehouse (1953). When Adelie chicks begin to moult their down and show their first year plumage,



they no longer seek the protection of the creches and disperse back to their nest sites. Skuas can now be seen walking among the chicks which do not show fright, for the chicks quickly repel those that approach too close. The Skuas thus respect penguins that show a bold front. During my studies on the Pygoscelid Penguins I was constantly impressed by the fact that these predators, almost without exception, attacked the weak or stupid chicks only.

*Individual recognition.*—Richdale has shown that Yellow-eyed Penguins recognize others in the community, and parents recognize their own chicks. Unlike the Adelie, whose chicks group together in creches, the Yellow-eyed Penguins' nests are scattered among rough and wooded country. Previous literature on the Adelie summed up by Murphy (1936) suggests that parents do not recognize their chicks in the creche and that they feed indiscriminately. In 1948-49, I placed coloured rings round the flippers of chicks of marked parents before they went into the creches and discovered that the parents found and fed their own offspring, and only under exceptional circumstances fed strangers. A substantial amount of evidence was also collected to support the fact that the pair-bond between two Adelies was maintained more as a result of the individuals recognizing each other from year to year (even after separation during the winter months) than by their return to the same nest sites. Penguins recognize each others' features, gait, movements and voice. The mutual display seen so frequently between two of a pair and between parents and chicks at the nest, and later when a parent comes back to feed its young in the creche, has an important function in the Adelie, for I believe the noise and movements confirm as well as re-enforce recognition.

Individual recognition thus plays a very much more important part in a penguin community than has generally been supposed. The more one studies these interesting birds by marking them, the more is one impressed by the orderliness of their social structure, a structure based on many attributes which are taken for granted in human behaviour, but which might be thought incredible in such a lowly animal.

*Porpoising* is the normal swimming movement of penguins and is used by no other birds. Adelies porpoising at high speed is a truly magnificent sight. Swimming for several yards under water they surface, and, barely rising as much as a foot, vanish under the surface again a few feet ahead. They no doubt breathe each time they surface, and can travel at ten knots or more. When landing, an Adelie (Photo 7) or Gentoo will pop out of the water like a jack-in-the-box, clearing up to six feet of ice-cliff in an almost vertical leap. Sometimes they land erect and, balanced by their tails, run





W. Sladen]

ADELIES LEAPING OUT OF THE SEA ONTO THE ICE-FOOT



W. Sladen]

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CHIN-STRAP AT NEST WITH TWO CHICKS. NOTE FLIPPER RING

[To face p. 136.







forwards halting hurriedly. At other times, still landing on their feet, they will fall on to their bellies and toboggan along the snow surface in a most enchanting and amusing manner.

*Pathological conditions in the Adelie, Chin-strap, and Gentoo Penguins.*—Infestation with intestinal parasites was the only constant pathological condition found in wild penguins. The amount of infestation varied according to the species, and in the case of the Gentoos also according to their breeding distribution. For example, the Falkland Islands breeding Gentoos were almost free, whereas the ones breeding on Graham Land and the South Orkneys were riddled with a cyst-forming cestode.

Many wild birds were dissected,\* but in none was found any macroscopic evidence of the fungal infection which causes mycosis. Moreover, forty-one cultures taken from throats of healthy Penguins at their breeding places or within six days of capture, though they grew a variety of moulds, did not demonstrate any that were potentially pathogenic. These cultures, collected by swabbing the part of the throat around the nasal passages and epiglottic region, were grown on Sabouraud's media, and brought back to the London School of Hygiene and Tropical Medicine for identification. More work of this nature is required, for evidence that the spores of pathogenic moulds do not occur as normal inhabitants of the upper respiratory tracts of wild birds is still fragmentary. Nor is there sufficient evidence that the spores reach the birds via infected foodstuffs (Sladen, 1952).

Wild penguins are therefore remarkably free from disease and it is only when they are brought into captivity that they become susceptible.

#### CAPTURE AND TRAVEL

How can our knowledge of penguins in the wild be used to build up a healthy and contented community of breeding birds in captivity? We have seen that they know each other as individuals, usually keep the same partners from year to year, and come back to the same area, and often to the exact nest-site, to breed. Affinity draws some together; lack of affinity repels others. Disease appears to be accelerated when a bird is unhappy and lonely; morale higher when their gregarious nature is satisfied. In the light of such knowledge, the capture of penguins becomes a job which should not be undertaken indiscriminately, as is so often the case, but in a careful and thoroughly scientific manner. I believe the best way to do this would be to collect a complete section of a penguin colony. This section should include peripheral nests as well as central ones for, as already

\* It was necessary to feed our sledge-dogs on seal and penguin meat. Maximum biological use was made from all collected for this purpose, and particular care was taken to cause no unnecessary waste of life.



explained, the inexperienced younger birds are more likely to be on the edge than inside. In theory, this sounds excellent, but it may be difficult to put into practice. For example, at what time of the season should they be collected? This can only be answered according to knowledge of the breeding routine and habits of the individual species, a knowledge which is still incomplete for most, and is thus quite out of the scope of this paper. A few general principles should, however, be discussed.

First, the birds should not be incubating or rearing chicks, for one of the pair is likely to be away at sea. Second, though most species return to their breeding place to moult, after recuperating from the breeding season at sea, and during this period fast for about a fortnight, the physiological upset at this time would make travelling (especially through the tropics) undesirable and probably dangerous for the birds. Thus the only good time to collect birds, as a community, may prove to be during the short period after most of the colony have settled down into pairs at their nest sites and before eggs are laid. The Antarctic is still ice-bound when the Adelies are at this stage. The Chin-strap colonies might be more accessible for their breeding cycle starts roughly one month later, and the first eggs are laid at the end of November or early December. Penguins that breed in the Sub-Antarctic and more temperate zones, and particularly the non-migratory species, should present fewer problems, and I would suggest that this method of collecting a section of the community should be tried first on these.

It is now generally accepted by zoos that the expense of transporting penguins by air is worth while. In my own experience, they travel best if standing on half-inch mesh wire netting in a box of similar design to that recommended in the Third Annual Report (1949-50) of the Severn Wildfowl Trust. A slatted front with sack curtain is much safer than a wire netting front, through which they thrust and often damage their bills.

#### LIFE IN CAPTIVITY

Two, often conflicting, points of view must be considered: the birds', and the zoo's.

##### *From the Birds' point of view.*

(1) *A community of the same species.*—Many zoos are justifiably anxious to exhibit as big a variety of animals as possible. For penguins, however, there should be a different approach, an approach which concentrates on building up reasonable sized communities of at least ten pairs each of, say, two or three individual species. Zoos in different parts of Britain and America will eventually discover which of the eighteen possible species of penguin are most suited to their climate and conditions. How much more interesting and instructive will it



then be to visit different places boasting successful breeding colonies of their own specialities.

(2) *Acclimatization*.—The first year in captivity usually takes the greatest toll of wild birds. More attention paid to acclimatization during this period, for example, by transporting them direct to a spacious quarantine station in the country, might save money in the long run. The upkeep of a lake and enclosures would be prohibitive for one zoo, but could be shared by several. A station like this could solve many problems of quarantine in zoos, and also prove of immense value as a centre for investigating avian disease, and especially mycosis, in captivity. Unfit birds could be sent there for observation and would, no doubt, stand a better chance of recovery than if left in unfavourable and cramped conditions in zoos. Gillespie (1932) stresses the fact that King Penguins, once recovered from the strain of their voyage to Europe, become indifferent to conditions of weather and temperature, and if anything, prefer the sunshine. Thus the most important functions of acclimatization would be (i) to build the birds up to the health they enjoyed before capture, (ii) to allow them to adapt themselves to different food and a new fresh water environment and, probably the most important, (iii) to give them a chance to adjust themselves to a very much less active life in captivity.

(3) *Space and nesting sites*.—From the birds' point of view, obviously the larger the enclosure and the deeper and bigger the lake the happier they will be. There must be limits, but the limits set by many zoos are too severe. Penguins in captivity are very rarely seen porpoising because the ponds are too small and shallow. They are sometimes even deprived of their natural nest material. If they build nests of stones or grass they should be given stones, or typical grasses planted in their enclosures (as is most successfully done at Edinburgh Zoo). If they nest underground in burrows, they should have a suitable place for this. Due to lack of appreciation of their habits and behaviour in the wild, these very simple but fundamental requirements are often overlooked; yet one or two small points rectified might tip the balance in favour of breeding.

(4) *Human interference* is a difficult and controversial topic. Should birds that refuse food be force-fed? Should a bird that scratches away its new laid egg from the nest, or tramples its young chick, be interfered with? These questions I cannot answer with any authority for birds in captivity, but in the wild this kind of behaviour is seen frequently where certain species normally fast for long periods, and where many apparent inconsistencies in behaviour and temperament can be attributed to age and breeding experience (Photo 2) as well as to variation among individuals. The establishment of a reasonable sized community of one species would minimize the need for human



interference because the birds would be happier and breeding, and it would not matter losing the odd egg or young chick.

(5) "*Occupational therapy*."—No better example can be given than the King Penguin parade to the post-box at Edinburgh. This kind of activity has public appeal, and gives the birds something else to look forward to as well as their food. The exercise keeps them in condition while all the time they are becoming more familiar with humans and close quarters. If this sort of therapy is not practicable, they should at least be given their natural nest material to "play" with, or suitable breeding burrows to excavate.

*From the Zoo's point of view.*

A balanced view must, of course, be taken, for penguins are not the only animals in a zoo! Much will depend on the size of the zoo, its situation, and financial commitments. A large zoo could probably afford the upkeep of a large enclosure with communities of two or three species. There is no reason why species should not be mixed, in fact the contrast in behaviour between one kind and another is most entertaining. In the Antarctic, the Adelies, Chin-straps, and Gentoos breed in the same rookeries, and often side by side. On Deception Island, South Shetlands, a small colony of Macaroni Penguins, *Eudyptes chrysolophus*, nest amidst a community of hundreds of thousands of Chin-straps. A small crowded zoo would save unnecessary expense and disappointment by purchasing captive bred penguins, and concentrating on one species only. If enclosure must, of necessity, be small, some form of "occupational therapy" will help to keep them happier.

Acclimatization for a year, although ideal for the penguins, will be an additional financial burden for a zoo whose aim is naturally to have the birds on show as soon as possible. This approach, as already explained, should save money in the long run. Hygiene is another controversial subject, though the zoos that worry least about this appear to have the best breeding results. Penguins live in squalor in the wild, and I therefore believe it more important that they have adequate nesting material and surroundings than a barren and uninteresting enclosure designed for frequent ablutions. Surely visitors to a zoo have to be prepared for a few strange smells. A community of penguins would, however, find it difficult to compete with the odours that come from the elephants, seals, or a wallowing hippopotamus. Moreover, incubating penguins are often fasting, and their excreta quite innocuous. Carefully designed enclosures could discourage the accumulation of too much guano, and still allow the birds plenty of scope for breeding in as near a natural environment as possible.



## A STUDY IN CAPTIVITY

A study in captivity cannot take the place of a study in the wild, for three important reasons :—

- (i) The birds are in confined and abnormal surroundings.
- (ii) A large enough sample cannot be studied to make allowances for variation among individuals.
- (iii) Those in authority in zoos are naturally reluctant to allow birds or their young to be handled.

There is, however, an almost unexplored field for research on many practical aspects of life in captivity, and these, correlated with a knowledge of the same species' behaviour in the wild would ultimately help to solve many problems such as breeding efficiency, the moult, mycosis, and some aspects of behaviour. So many ideas and "hunches" are founded on isolated examples, and it is only by systematic and well planned research on a small community that our knowledge can be really furthered.

As in the wild, one of the most important aids to a study in captivity is to mark the birds. I do not wish to refute the fact that the keepers and those who spend a long time with their birds recognize them as individuals. They no doubt do if the number is small enough, but research workers come and go, and valuable material is sure to be lost during the penguin's life span of ten to twenty years. They should therefore be marked with metal rings as soon as they arrive in the collection. These rings, bearing a large reference number (or popular name for each individual if preferred for public enjoyment), are best attached round the flipper (Photo 8), in the axilla so that the number can be plainly read from a distance. These flipper-rings (Sladen, 1952a), must be put on very carefully, otherwise they will injure the bird. Richdale (1951a) marked his wild birds with tarsus rings. These also require skill and care, and though successful with the New Zealand penguins, are unsuitable for the Antarctic species which nested on rocky ground.

## ACKNOWLEDGMENTS

I would like to express my thanks to Dr. J. T. Duncan and Dr. G. Smith, of the London School of Hygiene and Tropical Medicine, for kindly identifying the moulds isolated from penguins in 1949 and 1951 and to Dr. L. E. Richdale for advice and criticism of this paper.

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 ——— 1952a. "Notes on Methods of Marking Penguins," *Ibis*, 94 : 541.  
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Dr. Edward Hindle, Mr. G. S. Mottershead, Chester Zoo, Mr. D. H. S. Ridson, Dudley Zoo, and Miss Phyllis Barclay-Smith, took part in the discussion on penguins in captivity which followed.

The President of the Conference then moved a vote of thanks to the President and Council of the Zoological Society of London for the loan of their meeting room and many other facilities, and this was agreed with acclamation.

Miss Barclay-Smith then said she would like to move a particularly warm vote of thanks to Mr. L. Ellis, Library Assistant of the Zoological Society, who had been in charge of all the projection of films and slides, during the Conference, and to whom a great deal of the success of the meetings was due. This was received with prolonged applause.

A vote of thanks to Miss Barclay-Smith for presiding over the meetings was moved by Miss E. M. Knobel, Vice-President of the Society, and the proceedings then terminated.

On Saturday afternoon a Garden Party was held at Foxwarren Park, Cobham, Surrey, at the invitation of the President of the Avicultural Society and Mrs. Ezra, and was attended by 150 guests.

In the evening the closing dinner was held at the Rembrandt Hotel, at which one hundred members and guests were present.

Chairman : Miss P. Barclay-Smith.

Members of the Society :—Mrs. H. G. Alderson, H. Blythe, Miss K. Bonner (Assistant Secretary), Mrs. V. M. Bourne, W. J. Boyd, G. T. Clark, Mrs. G. T. Clark, J. O. D'eath, O. E. Dunmore, A. Ezra (President), J. F. M. Floyd, Miss S. A. Fothergill, J. C. Garratt, Miss D. Gask, Rt. Hon. Lord Gerard, H. J. Harman, Dr. E. Hindle, G. T. Iles, S. B. Kendall, H. T. King, R. G. Kirkham, Miss E. M. Knobel (Vice-President), Miss M. H. Knobel-Harman, J. C. Laidlay, Dr. F. B. Lake, H. M. Luther, P. H. Maxwell, E. R. Mighell, F. Mosford, G. S. Mottershead, H. Murray, S. Murray, Sir Crawford McCullagh, Bart., K. A. Norris, C. M. Payne, S. Porter, A. A. Prestwich (Hon. Secretary), J. H. Reay, D. H. S.





MISS KAY BONNER AND MR. A. A. PRESTWICH.

[To face p. 142.]



DIAMOND JUBILEE DINNER,

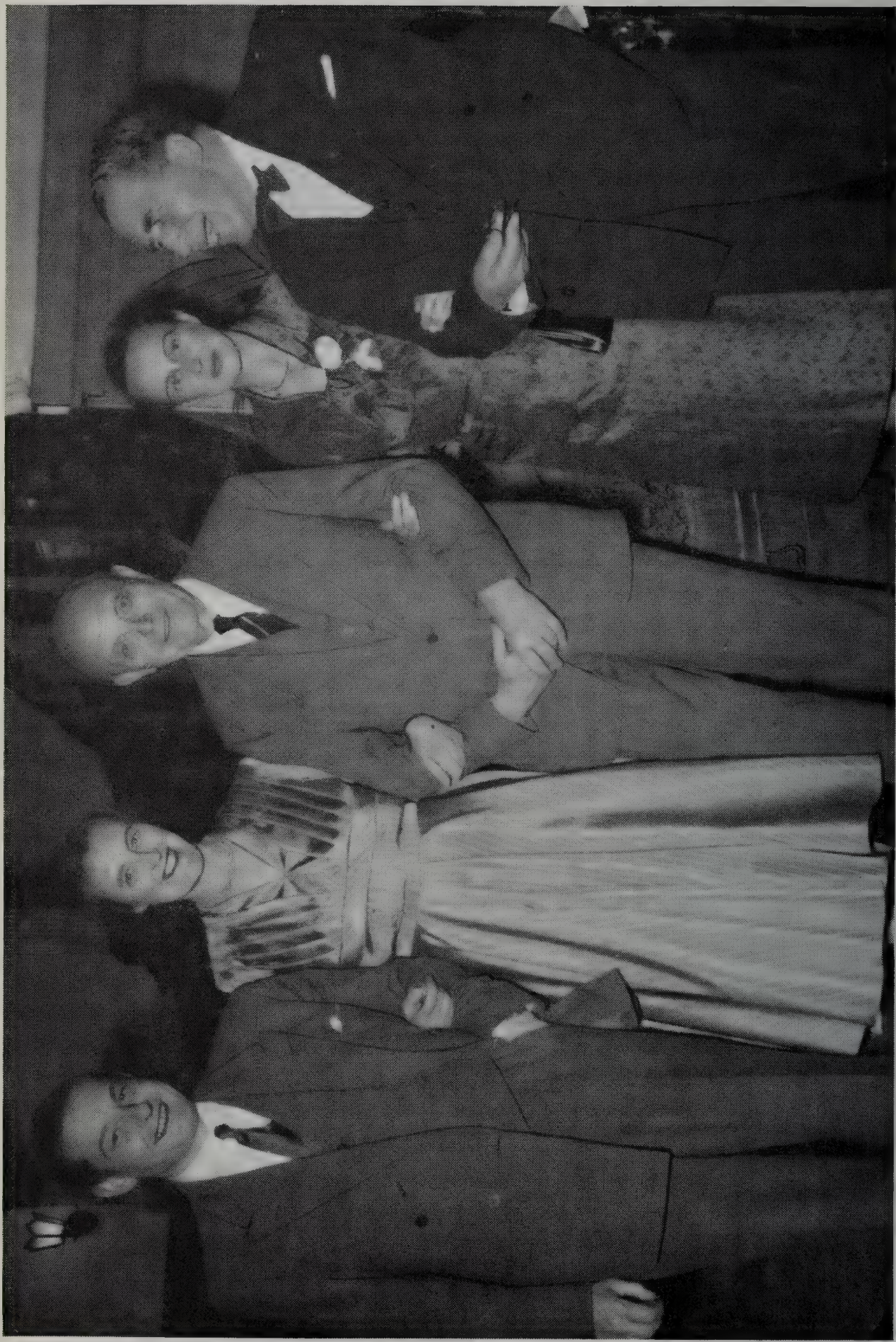






19th JUNE, 1954.





LEFT TO RIGHT :—MONSIEUR W. VAN DEN BERGH, MISS PHYLLIS BARCLAY-SMITH, MONSIEUR JEAN DELACOUR, MADAME VAN DEN BERGH. DR. E. HNDLE.





LEFT TO RIGHT :—MR. G. ILES, MR. D. RISDON, MISS KAY BONNER,  
MR. G. S. MOTTERSHEAD.



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MR. S. PORTER AND MEVROUW LOUWMAN.

*To face p. 143.]*



Risdon, R. C. J. Sawyer, P. Scott, D. Seth-Smith (Vice-President), A. Silver, E. Wilford Smith, T. Spence, E. N. T. Vane, Captain R. W. Veitch, N. S. Walker, H. Waller, E. C. Whatley, H. Wilmot, J. J. Yealland.

*Overseas Members and Guests.*

*Belgium.*—M. Walter Van den bergh (Director, La Société Royale de Zoologie d'Anvers), Mme Walter Van den bergh.

*Denmark.*—Paul Hansen.

*Germany.*—Dr. Joachim Steinbacher, Editor (*Die Gefiederte Welt*).

*Holland.*—G. de Goederen, Mrs. G. de Goederen, Mrs. P. Louwman, J. Louwman, Wassenaar Zoo.

*U.S.A.*—Dr. G. A. Allen, Editor (*Pheasant Fanciers, Game Breeders, and Aviculturists' Gazette*), Mrs. Belle J. Benchley, Jean Delacour (Vice-President).

Guests.—Dr. K. Aylwin-Gibson, J. Bailey, Miss A. Blythe, Lieut.-Col. C. L. Boyle (Secretary, Fauna Preservation Society), Mrs. C. L. Boyle, Mrs. W. Buckingham, S. A. Croucher, Mrs. S. A. Croucher, L. Ellis, Mrs. L. Ellis, Mrs. J. C. Garratt, Miss K. Gentry, T. A. M. Jack (Falconers' Club), E. R. W. Lincoln (Editor, *Age Birds*), Sir Philip Manson-Bahr, Lady Manson-Bahr, Mrs. R. Maurice, Mrs. S. Murray, Mrs. C. M. Payne, Miss R. Phillips, Mrs. J. H. Reay, Dr. K. G. Rothwell, Mrs. K. G. Rothwell, Mrs. R. Russell, Mrs. D. Seth-Smith, Dr. W. Sladen (Falkland Islands Dependencies Survey), Mrs. E. Wilford Smith, Miss M. Wilford Smith, E. B. Tanner, D. F. Waller, Mrs. D. F. Waller, Mrs. H. Waller, Miss M. White, Mrs. H. Wilmot, A. J. Woods, Mrs. A. J. Woods.

A special souvenir menu was provided, with a coloured illustration of the Green-headed Olive Sunbird.

The following toasts were made :—

*H.M. The Queen*

Proposed by the Chairman.

*The Society*

Proposed by Sir Philip Manson-Bahr, C.M.G.

Reply by M. Jean Delacour.

*Overseas Guests*

Proposed by Miss P. Barclay-Smith.

Reply by Mrs. Belle J. Benchley.



*The Secretaries*

Proposed by Dr. E. Hindle, F.R.S.

Reply by Mr. A. A. Prestwich.

In addition, the Chairman was pleased to take wine with numerous members and guests.

One hundred and thirty-seven members and guests registered for the Conference, and all the Vice-Presidents of the Avicultural Society attended, with the exception of Mr. Edward Boosey, who was prevented by illness at the last moment from being present. Mr. and Mrs. P. Duyzend (Holland) and Monsieur C. A. Ullens de Schooten (Belgium), attended the Conference, but were unable to be present at the dinner.

\* \* \*

## LONDON ZOO NOTES

By J. J. YEALLAND

Mr. and Mrs. G. M. Durrell have recently returned from Argentina and Paraguay, bringing a small collection of birds, mammals, and amphibians. Some of these were presented to the Society, and the remainder to the Paignton Zoo. Among the birds were a Brown Cachalote (*Pseudoseisura lophotes*), the first of this genus to be exhibited here; a Southern White-breasted Crake (*Creciscus leucopyrrhus*), also known as the Red and White Crake, and two d'Orbigny's Pectoral Sparrows (*Arremon orbignii*), new to the collection.

Two Guira Cuckoos (*Guira guira*); an Argentine Lapwing (*Belonopterus cayennensis grisescens*); two Jendaya Conures (*Eupsittula jendaya*); a Scarlet-headed Marsh Bird (*Anblyrhamphus holosericeus*); a Green Cardinal (*Gubernatrix cristata*); two Yellow-billed Cardinals (*Paroaria capitata*); a Brazilian Blue Grosbeak (*Cyanocompsa cyanea*); three Striated Tanagers (*Thraupis bonariensis*); two Violet Tanagers (*Tanagra violacea*), and a Blue Sugar-bird (*Dacnis cayana*) complete this interesting presentation.

It will be seen that not all these birds were collected in Argentina and Paraguay; some were obtained in Rio de Janeiro on the way home.

The *Daily Mail* Himalayan Expedition has presented two Satyr Tragopans (*Tragopan satyra*); a Himalayan Monal (*Lophophorus impejanus*) and a Himalayan Snow Partridge (*Tetraogallus himalayensis*); Mr. Sibley sent a gift of two Lapland Buntings (*Calcarius lapponicus*); two Yellow Buntings (*Emberiza citrinella*); a Reed Bunting (*Emberiza schæniclus*); four Twites (*Carduelis flavirostris*); two Lesser Redpolls (*C. flammea cabaret*); a Goldfinch (*C. carduelis britannica*);



two Lesser Whitethroats (*Sylvia curruca*) ; a Wheatear (*Ænanthe ænanthe*), and a Greenland Wheatear (*Æ. æ. leucorrhoa*). A Kittiwake Gull (*Rissa tridactyla*) has also been presented.

Three Pileated Jays (*Cyanocorax chrysops*) ; a pair of Wedge-tailed Sunbirds (*Anthobaphes violacea*), and a Black-headed Bunting (*Emberiza melanocephala*) have been purchased ; a Brown Thrasher (*Toxostoma rufum*) deposited, and six King Penguins (*Aptenodytes patagonica*) ; four Purple Herons (*Ardea purpurea*) ; a pair of Teal (*Anas crecca*), Common Wigeon (*A. penelope*), and Common Sheld-Duck (*Tadorna tadorna*) have been received in exchange. Two Night Herons, six Egyptian Geese, two Upland Geese, a Silver Gull, a Black-footed Penguin, five Red-rumped Parrakeets, and three Greenfinches have been bred. The King Penguins, Rheas, Snowy Owls, and Green-winged King Parrakeets have eggs ; the Canada, Greenland White-fronted, and Emperor Geese all laid infertile clutches.

The Marabou Storks and Indian Wood Ibises showed signs of nesting, and carried twigs about, but nothing came of it. The Choughs got as far as hatching a chick, but it did not long survive.

It is hoped that the aviary for homing Budgerigars will be finished by mid-July.

\* \* \*

## BRITISH AVICULTURISTS' CLUB

Meetings and dinners during the 1954-55 session have been arranged for the following dates :—

8th September, 1954.  
10th November, 1954.  
12th January, 1955.  
9th March, 1955.  
11th May, 1955.

ARTHUR A. PRESTWICH,  
*Hon. Secretary.*

\* \* \*



## NEWS AND VIEWS

Miss Phyllis Barclay-Smith represented the Society at the XIth International Ornithological Congress, at Basel, 29th May–5th June, 1954.

\* \* \*

A. K. Klenk, Western Australia, reports a prolific pair of Gouldians. Last breeding season they had twenty-nine young ones from five nests—six, seven, four, five, and seven.

\* \* \*

Green-winged King Parrakeet—two have been reared at Foxwarren Park : one hatched at the London Zoo was taken by vermin. Lineolated Parrakeet—Mrs. D. K. Draper has two young ones flying. Black-headed Conure—C. M. Payne has three very advanced young ones in the nest-box.

\* \* \*

Few of our members have been so consistently successful in breeding rare birds as Sidney Porter. During the past thirty years he has had many successes, but now there is the prospect of one to eclipse all previous—the Malachite Sunbird. The first nest contained an egg with a fully-developed young one that failed to emerge. The hen is again sitting on two eggs—this time it is to be hoped with a happier result.

\* \* \*

C. af Enehjelm, Helsingfors, reports one Black-crested Finch fully reared ; two left the nest, but one was weakly and soon died. The parents are again on three eggs. Also reared : one Red-headed Parrot Finch, five Cherry Finches, one Fire Finch, three Ruficaudas, three Bichenows, and five Cordon Bleus. It has been a bad year so far for Parrot Finches ; many clear eggs and one young one from one pair ; three other pairs have done nothing at all.

\* \* \*

D. Bowles, Director-Secretary, Royal Zoological Society of Scotland, reports on the breeding of King Penguins in the Edinburgh Zoo, 1953 : “Thirteen King Penguin eggs were laid, of which five proved to be infertile. Of the remaining eight, three chicks hatched, but one died a few days afterwards. This meant that five birds were found dead in the shell, and it appears almost certain that the reason for this was some violent electric storms which occurred a few days before the eggs were due to hatch, causing the parents to desert the eggs, which were thus allowed to chill resulting in the death of the inmates.” Altogether, a total of 23 Penguin eggs were laid, from which seven



chicks were reared—two King, two Gentoo, one Ringed, and two Macaroni.

\* \* \*

A nest of four blue Ring-necked Parrakeets, not three as previously reported, were hatched at Keston. Misfortune, however, overtook this brood. Vice-President Boosey writes: "My heart sank as each day became colder and colder about the middle of May, as I knew the young Ringnecks would be in that critical stage when they are too big for their mother to brood them, but they are only just starting to feather. Finally, when the parents had started to eat less and less, I decided to look in the nest-box, and found three well-grown young ones in the quill stage, dead; only the fourth and eldest, which was better-clothed, being still alive." The fourth young one eventually left the nest, but was later found dead in the shelter—possibly killed by a marauding Magpie.

\* \* \*

A tragedy of another kind has occurred at a well-known zoo. A pair of Lesser Sulphur-crested Cockatoos showed great interest in a nest-box, and when they disappeared it was assumed they were nesting in earnest. When, after several days, the box was inspected, the two Cockatoos were found to be dead, having been unable to climb out. Since then we have heard of a Leadbeater's Cockatoo suffering a similar fate. These events are cited as a warning to breeders to make doubly sure that their birds have an easy means of climbing up to the entrance hole.

A. A. P.

\* \* \*

## REVIEWS

CIEN DE LAS MAS CONOCIDAS AVES VENEZOLANAS. By KATHLEEN DEERY DE PHELPS. Published by the Creole Petroleum Corporation, Caracas, Venezuela.

This attractive book, the first illustrated book on the birds of Venezuela to be published, does great credit to its author, who is also responsible for the coloured plates. It contains a hundred coloured illustrations of the best known birds in Venezuela with a descriptive text about the bird, its nest, eggs, and other details, together with a map showing its distribution. The distribution maps are coloured differently, each colour indicating a different zone according to the altitude, for instance the tropical zone 0 m. to 1,500 metres is depicted in red, the sub-tropical zone, or 1,500 to 2,500 metres, in yellow, the temperate zone from 2,500 to 3,500 in blue, and the heights above this in grey. By this method it can be seen at a glance at what altitudes the bird is found. Hints are given as to the food to be put out for birds,



and how to attract them to the garden by the provision of water. Advice on photographing birds is added and also ideas for noting observations. A section deals with the protection of birds pointing out that they have many enemies and drawing attention to their usefulness in destroying harmful insects.

The book, which is primarily intended for distribution among the schools of Venezuela, is one that all those interested in the colourful birds of the South American continent will wish to possess. The Creole Petroleum Corporation are to be congratulated on their far-sightedness in making the publication of this book possible for it will undoubtedly do much to arouse an interest in the birds of Venezuela both in that country and other parts of the world. Anyone wishing to obtain the book should write to the Creole Petroleum Corporation, Caracas, Venezuela.

P. B-S.

COLLECTION OF 24 COLOURED POST-CARDS. Editions N. Boubée and Cie, 3 Place St-Andre-dex-Arts, Paris (VIe). 700 Fr.

A collection of 24 coloured post-cards from paintings by that well-known French bird artist, Paul Barruel, have been published by N. Boubée at 700 francs for the set, or 300 francs for 10 of the same subject. The birds depicted are Pelican; Amherst and Golden Pheasants; Ostrich; Flamingo and Little Egret; White Stork; Mandarin Duck (male and female); Mute Swan; Great and Blue Tits; Golden Oriole; Swallow; Chaffinch and Goldfinch; Skylark, Long-eared Owl, White and Blue-headed Wagtails, Kingfisher, Green and Great Spotted Woodpeckers; Ruby and Topaz Humming Bird and Racquet-tail Humming Bird; Great Bird of Paradise and Superb Bird of Paradise; Yellow and Blue Macaw, and Blue-fronted Amazon; Sulphur-crested Cockatoo; Ariel Toucan, and Red-billed Toucan; Condor, Peacock, King Penguin. The names of the birds in French, English, and German, together with the scientific name are given on the back of the card and also the size of the bird and the country of origin. The cards are brightly coloured and attractive though somewhat diagrammatic in treatment.

P. B-S.

\* \* \*

## NOTES

### NOTES FROM LOURENÇO MARQUES

You may be interested to hear that I have another pair of African Greys with young. After one abortive attempt—due I think to interference, unintentional, on my part—the hen went to nest again in March. I have not dared—after my first experience—to disturb the birds, so do not really know what has happened. I am satisfied, however, that at this date there must be young as one or other of the birds is always on the nest.

Incidentally, amongst my “run of the aviary” breeding successes this year, I have managed to rear two lots—each of two—of Crested Barbets and one of Magpie Robins



(from India). A third brood of Crested Barbets was lost—again because of interference. The more breeding I have the good fortune to supervise, the more I am convinced that losses are to a very large extent caused by the intentional or unintentional interference of the over-curious and impatient owner.

I recently procured, in very damaged condition, a Little or Pigmy Bee-eater. I have now had it a month or so, and it is very nearly back to normal. I have force-fed it on meat, which it still does not always take willingly, and on grasshoppers, mealworms, etc., and I now see no reason why it should not make the grade. I am quite proud of this achievement, for which I must thank my wife who struggled manfully while I was away at office, as this is the first Bee-eater I have ever tried to keep. Contrary to what I have read, this Bee-eater is far from silent—in fact on a warm day it keeps up a constant chattering, and has a very pretty little song.

E. H. HAWKE.

#### BREEDING GOLDEN-SHOULDERED × HOODED PARRAKEET HYBRIDS

The Golden-shouldered is exceptionally rare. For the last twenty-five years I have made many attempts to procure them, without success, until this year when two birds came into my hands. As these were both males, I had no alternative but to give them females of their closest relative—the Hooded Parrakeet. One male immediately commenced driving the female, and proceeded to dig a large hole under their bath trough. The female, however, preferred a nesting box, which the male eventually agreed to. Four eggs were produced and four youngsters are now completely reared—three males and one female. It was most interesting that this small, cheeky bird would immediately attack me on entering the aviary, and on several occasions it nipped my ear, or the back of my hand. Another point of great interest is that the Golden-shouldered and the hybrid can be sexed as soon as they leave the nest. The female is quite plain, but the male is very much brighter.

For the breeding season commencing May of 1955, I am proud to say that (excluding hybrids) at least four pairs of Golden-shouldered are already in my aviaries.

E. HALLSTROM.

\* \* \*

## CORRESPONDENCE

### BREEDING OF RED AND YELLOW MACAWS—CORRECTION

Sir Edward Hallstrom, on reading through my letter as published in the March-April AVICULTURAL MAGAZINE, has called attention to an error. The paragraph in question should read "The Red and Yellow Macaws have reared five youngsters" and the words "this year" were incorrect. These birds are again nesting.

WALTER H. TURNER.

162-4 WILLOUGHBY ROAD,  
WILLOUGHBY,  
SYDNEY, AUSTRALIA.

### LIBERTY FISCHER'S AND MASKED LOVEBIRDS

It may be of interest to your members to hear that I am now in my second season with Fischer's and Masked Lovebirds, which I am flying at liberty.

The original pair homed to a flight 6 feet by 3 feet, bred four youngsters, who left the flight two days after leaving the nest, and were herded back by anxious parents towards the late afternoon. I now have nine with two pairs nesting, and I have heard of a further pair, which I thought to be lost, nesting in the eaves of a nearby house. The furthest distance which has been reported to me is two miles from their aviary, and due to their habit of continually calling on the wing, I have had numerous reports up to one mile, including a telephone call to say that three were sitting on the siren of the local fire station.

Their flight home is now very straight, and with purpose, and since I am moving house to about three miles away, I wonder if I can keep them to new quarters.

L. G. MIDDLETON.

CHURCHTOWN, LANCS.



### " MARKED WHITE " ZEBRA FINCH

In the September-October issue of the *Avicultural Journal* there appears an article on the recent arrival at Keston of the Marked White Zebra Finch.

In his article Mr. Boosey has changed the name of the Australian bred Marked White Zebra Finch to the Chestnut-flanked Zebra Finch, yet he states that the name " Marked White " describes them tolerably well.

So as to keep names uniform it is suggested that the country of origin should be consulted as to the desirability of a change of name.

As this variety is well established in Australia, and is known throughout as the " Marked White ", a change of name now would only add to the confusion that already exists through the multiple naming of birds.

Wishing the *Avicultural Magazine* every success.

LEWIS M. CAMPBELL,  
*Hon. Secretary, Avicultural Society of Australia.*

4 HAWTHORN GROVE,  
HAWTHORN, E. 2,  
VICTORIA, AUSTRALIA.

### BREEDING OF ECLECTUS PARROT WITH ABNORMAL COLORATION

One very interesting bird which Sir Edward has bred, and that came out of the nest while I was away, is a hen Eclectus with a yellow and orange head. The wings and side feathers have the appearance of a patchwork quilt, some of the feathers having a normal maroon colour, whilst the other feathers have the appearance of being yellow mixed with maroon. The head of the bird, though mainly yellow and orange, also has a few flecks of red feathers in it. The hen Eclectus usually has a black bill, but with this bird it is noticed that there is quite a lot of yellow in the bill. The bird is strong and vigorous, although a little more timid than the usual young Eclectus.

Sir Edward hopes to photograph this bird in colour to enable him to check the colours as each moult takes place.

WALTER H. TURNER.

462-4 WILLOUGHBY ROAD,  
WILLOUGHBY,  
SYDNEY, AUSTRALIA.

### MOUNTAIN BLUE ROBINS

The Blue Robins had five eggs in the first nest, and young hatched on 22nd June—cannot say how many, but judging by the vast quantity of live insects carried to the nest, and the excreta brought out by the old birds and " dumped " on the door frame (the same spot as used last year for this purpose), I should say there must be at least four lusty youngsters.

Although both parents are kept well occupied feeding this family, the cock has found time recently to encourage the hen to build a second nest, which she has now completed in a box in the flight, and I think she will be laying again in a day or so. I am a little disturbed by these " rush tactics " in case the second nest hatch before the first lot are independent. It would be amazing if the cock continued to feed the older family and the newly-hatched young at the same time.

K. A. NORRIS.

ELMSTONE,  
HIGHFIELD ROAD,  
PURLEY.

*Later postscript.*—The Blue Robins have four young on the wing and a further five eggs. One egg from the first nest was infertile and was thrown out into the soft ground. The Cedar Waxwing promptly " adopted " it and has been brooding it on the floor where it fell!

\* \* \*



## CANDIDATES FOR ELECTION

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- J. C. BATY, Rt. 3, Box 112, Munday, Texas, U.S.A. Proposed by W. B. Frostick.
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- HIDEO KOIDE, Kabaike Tokoname-city, Chita-gun, Aiche-pref, Japan. Proposed by A. A. Prestwich.
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- C. N. WALTER, 32 Stanley Avenue, Beckenham, Kent. Proposed by A. A. Prestwich.

## NEW MEMBERS

The fourteen Candidates for Election in the May-June, 1954, number of the AVICULTURAL MAGAZINE, were duly elected members of the Society.

## CHANGES OF ADDRESS

- N. G. ALLISON, to Kingsmead, Cheyham Way, Cheam, Surrey.
- J. A. ANDERSON, to 6 Charlotte Square, Edinburgh.
- B. BENEDICT, to 350 E. 52nd Street, New York 22, N.Y., U.S.A.
- MRS. J. DALZIEL BIRRELL, to Christmas Cottage, Brick Kiln Common, Wisborough Green, Sussex.
- R. BLOOM, to 20 Churchfield Road, Walton -on-Naze, Essex.
- MISS D. I. CAFFERTY, to 657 Wellington Avenue, Chicago 14, Illinois, U.S.A.
- M. S. COOMBER, to c/o The Bungalow, Burwash, Sussex.
- R. W. GURDEN, to 63 Abbott Road, Abingdon, Berks.
- C. H. KEELING, F.Z.S., to "Pan's Garden", Ashover, nr. Chesterfield, Derbyshire.
- C. J. S. MARLER, to Pheasants Nest, West Underwood, Olney, Bucks.
- E. G. SHORNEY, to 40 Ruislip Road, Greenford, Middx.
- J. H. WALMSLEY, to 12 Rhodes Street, Mount Pleasant, Port Elizabeth, South Africa.

## DONATIONS

	£	s.	d.
W. BIRD . . . . .	1	2	0
W. L. EAVES . . . . .	1	2	0
Captain C. SCOTT-HOPKINS . . . . .	1	2	0



## MEMBERS' ADVERTISEMENTS

*The charge for Members' advertisements is ONE PENNY PER WORD. Payment must accompany the advertisement, which must be sent on or before the 15th of the month to A. A. PRESTWICH, 61 CHASE ROAD, OAKWOOD, N. 14. All members of the Society are entitled to use this column, but the Council reserves the right to refuse any advertisements they consider unsuitable.*

### WANTED

Moustache Parrakeet hen.—V. J. LUCAS, Park House, West Rasen, Market Rasen, Lincs.

AVICULTURAL MAGAZINE, 1925 and 1927.—J. H. REAY, Cranmore, The Close, Hillingdon, Middx.

One pair of Cuban Finches, in breeding condition : must have been bred by an owner able to give their exact age.—Mrs. W. M. MATTHEWS, Glandore, New Park Road, Cranleigh, Surrey.

### FOR SALE

1954 nest of six Golden-mantled Rosella Parrakeets for sale to outside flights only ; £48.—L. G. MIDDLETON, Stack House, Old Green Lane, Garstang, Lancs.

Hand-reared Barrow's Golden-eye, Mandarin, and other species Ducks.—C. T. DALGETY, Radwell Mill, Baldock, Herts.

## AUSTRALIAN PARROTS IN CAPTIVITY

*A series of articles by Alan Lendon published in the Avicultural Magazine. A full account of 60 species of Australian Parrots is included in the book which deals where possible with the author's personal experiences in keeping them in captivity in South Australia.*

*There are one coloured and seven photographic plates. Stiff paper cover. Price 7s. 10d., post free. Published by the Avicultural Society, and obtainable from the Hon. Secretary, 61 Chase Road, Oakwood, London, N. 14.*



# AVICULTURAL MAGAZINE



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# THE AVICULTURAL SOCIETY

Founded 1894

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**Hon. Secretary and Treasurer : A. A. Prestwich** 61 Chase Road,  
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CEYLON BLUE MAGPIE.



# AVICULTURAL MAGAZINE

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## THE CEYLON BLUE MAGPIE

*Cissa ornata* (Wagler)

By G. M. HENRY (Church Enstone, Oxon, England)

This bird is confined to Ceylon, its relatives of the same genus being found no nearer than the Himalayas and Indo-Malayan countries ; it is therefore an interesting example of discontinuous distribution. In the pear-shaped island of Ceylon a great mountain massif, rising to 8,000 feet, occupies the centre of the southern half. Owing to the action of the monsoon winds, the southern and western aspects of these mountains and their foothills receive a heavy and well-distributed rainfall (80 to 250 inches annually), and it is this wet zone which constitutes the habitat of the Blue Magpie ; it is found from a few hundred feet up to nearly the highest point in the Island. Unfortunately, during the last century, the demands of tea and rubber cultivation have depleted the once-extensive forests of this region, restricting the bird's range very severely.

A forest-loving bird, it usually dwells in small flocks of less than a dozen except in the breeding season, when pairs or solitary birds are frequently met with. It moves about a good deal, a flock seldom being found for many consecutive days in the same area. They keep in touch with each other by a great variety of loud calls, most of which have a harsh or rasping quality. Some of these are described in my notes as follows : " a ringing, metallic *crink, crink-rink* suggestive of jingling a gigantic bunch of keys " ; " *crak crak rak rak rak*—a loud, rasping sound " ; " a sharp, harsh *qui qui* " ; " *crikrak* " ; " *twiwi-craa*—a as in hat ". Besides these calls, low conversational notes—squeaks, croaks, chatterings, and sucking noises—are uttered by members of a feeding flock, and a solitary individual will express its feelings in a quaint subsong into which it introduces excellent imitations of the notes of other birds—the scream of the Serpent Eagle, rattle of the Scimitar Babbler, etc.—all in subdued tones.

The Blue Magpie feeds on both fruit and animal food, but much prefers the latter. It partakes of the fruit of *Freycinetia*, a small screw-



pine which clothes the tree-trunks in its haunts. Small vertebrates, such as lizards and tree-frogs, are eagerly sought, and many insects, of which beetles, tree-cricket, and caterpillars appear to be the favourites. Hairy caterpillars are methodically rubbed on mossy branches—presumably to divest them of stinging hairs—before being swallowed. In hunting it is very active and agile, searching foliage most thoroughly, and often adopting attitudes worthy of a tit in the process. All levels of the forest, from ground to tree-canopy, come within its purview.

The flight is rather weak and laboured; the beautiful, graduated tail is carried closed and strap-like, except in vol-planing when it is widely spread. In flying any distance, the bird tends to drop from its perch to within a few feet of the ground, rising again at the end of its flight.

Moulting takes place in August and September. The breeding season is in the early part of the year. The nest—which has seldom been found—is built in a well-concealed site among foliage near the top of a tree in jungle. It is built of twigs in the shape of a crow's nest, with a deep cavity lined with soft roots or "old man's beard" lichen; the latter abundantly festoons the trees of the mountain forests. The three to five eggs are described as pale greenish-blue or whitish, heavily mottled with grey and brown.

So far as I am aware, the only Ceylon Blue Magpie that has been kept in captivity was one given to me in September, 1943, by Mr. Ralph West with whom I was staying. His tea-estate in the mountains, 4-5,000 feet, was in the best area for *Cissa ornata* known to me. It was partly surrounded by virgin forest, and a stream—rapid and bouldery—traversing the estate was bordered on both sides by a strip of jungle. This belt of trees was a favourite resort of a flock of Blue Magpies and offered exceptionally favourable opportunities for watching them. Coolies working in the neighbouring tea-field found one amongst the tea bushes and managed to capture it by throwing a "cumbly" (coarse woollen blanket carried by every estate labourer) over it. In the process the bird lost its tail completely; it was in heavy moult about the head, thin, and generally in poor condition, but seemed uninjured and worth taking some trouble over. A tea-plucker's basket was soon fitted with a perch and sacking cover, and in it "Cissy" spent the next few days until she could be taken to Colombo where more spacious quarters were available. Her feeding presented some difficulties, and much time had to be devoted to hunting frogs and lizards, beetles and grasshoppers—for her appetite proved to be quite unimpaired by her adventures. Once installed in a large cage in Colombo she thrived, tamed quickly, grew a new tail, and became a delightful pet. She lived in captivity for three years, the last one in the Colombo Zoo at Dehiwela. The greater part of her domesticated life was spent at Jaffna in the north of the Island, in a climate very different from her natural



abode—hot, dry except for two or three months of the year, and at sea-level ; in spite of this she maintained, in general, excellent health. A holiday upcountry, however—contrary to expectations—gave her little pleasure ; she lost condition, and on returning to Jaffna, fell ill and got so low that her life was despaired of. Brandy and milk, administered at frequent intervals in tiny sips, eventually restored her to health. Normally her diet consisted of bread and milk, scraps of raw meat, lizards, grasshoppers, and fruit such as bananas and pawpaw. On one occasion, when she was sharing a large aviary with a peacock and a pair of Great Stone Plovers, her predatory nature revealed itself ; a Spotted Dove was unthinkingly introduced into the company and Cissy lost no time in pouncing on it ; only the promptest of action saving its life. Although, in the absence of companions of her own kind, she refrained from uttering the noisy calls above-mentioned, she indulged in the subsong during her afternoon siesta, including in it a beautiful imitation of the *chok chaw-choyik* of a distant Jungle-Cock, which she must have learnt in her native forests in her youth. She was fond of bathing, and always became lively and talkative in rainy weather which seemed to have a tonic effect.

Although known as “ Cissy ”, and hereinbefore treated as of the sex appropriate to that name, no proof exists that “ she ” was indeed a hen ; the sexes are practically indistinguishable in this bird.

Regarding the “ expectation of life ” of the Ceylon Blue Magpie as a species, I am pessimistic. As already mentioned, the beautiful indigenous forests of the mountains and wet zone foothills are steadily being whittled away on one pretext or another, and are now but a pitiful fragment of their former extent. Protective laws exist for certain rare and beautiful birds, *Cissa* among them, but will and power to enforce them are absent, no real public opinion on such matters exists, and protective laws will be useless if the bird’s essential habitat be destroyed. Reafforestation in the hills consists mostly of the replacement of primeval forest with plantations of exotic trees—eucalypts, acacias, and conifers—which offer no harbourage to any of the more interesting of Ceylon’s endemic species. It is true that “ Wild-life Sanctuaries ” and “ Strict Natural Reserves ” exist—and look very well on paper—but they are neither sufficiently extensive nor sacrosanct to ensure the survival of a relict fauna. Unless the remains of the natural hill forests are rigorously preserved, both from official exploitation and the insidious process of illicit sapling-cutting and firewood stealing, I have personally no doubt that a very few generations hence will see this beautiful bird—and several other species which inhabit the same area—added to the sorry list of birds lost to our posterity by man’s greed, lack of foresight, and thoughtlessness.

\* \* \*



## LANCEOLATED JAYS BREEDING IN CAPTIVITY

By DEREK GOODWIN (Virginia Water, Surrey, England)

These notes are, in part, a continuation of my previous article (Goodwin, 1953) to which readers are referred for descriptions of the appearance, behaviour, and display of the species. The Spring of 1953 found me with only four Lanceolated Jays, the males Green and Yellow (birds are named according to colour of their rings), and the females Blue and White. The female Red got out in February and soon vanished, probably having been killed by some predator. Of the four remaining, the male Green is, and was, the tamest; he is very steady, has little fear of strange people, and will freely perform all his innate behaviour patterns within a few feet of me. At one time he was subordinate to Yellow, but since he gained dominance over him in June, 1952, he has retained it. Yellow is less tame and rather more jumpy and nervous. The female White is the shyest of all, but even she will behave quite normally within a couple of yards of me if I am still or moving quietly. Blue, in contrast to the others, who are all splendid specimens of their kind, is rather small and dingy in colour. She has what seems to be the garruline equivalent of that captious self-assertiveness that is apt to be correlated with sub-average stature in another species of vertebrate. She is quite as tame as Green, in the sense that she will come as near to me, but is very prone to take alarm, or offence, and to start scolding.



♀ SCOLDING.

She invariably does this if I look into any bush or tree in the aviary, and even to glance towards a possible nesting site or to search the ground vegetation for Partridges' nests will often elicit her harsh screams of disapproval. The others usually ignore this hysterical behaviour, although if she is particularly excited her cries and gestures



will sometimes evoke a similar, but less intense, response in them. I can only assume that she does this because such behaviour on my part "suggests" a nest- or roost-seeking predator to her, although if so it is rather strange that it should extend even to ground vegetation in which the species would be most unlikely ever to breed or sleep.

All four birds spent the winter of 1952-53 in an outdoor aviary about 30 feet by 20 feet by 8 feet high. The only shelter consisted of roofing felt, covering certain parts of the roof under which were strategically arranged perches, but although freely availing themselves of these by day the Jays all preferred to roost among the foliage of two Cupressus trees. In early March it became apparent that Blue, instead of pairing with Yellow, had set her cap at the "married" male Green. He showed no Macheathian embarrassment at the presence of two rivals for his favours, and when in courtship-feeding mood bestowed his gifts on whichever hen happened to be nearest. As soon as I realized the state of affairs I moved Yellow and Blue to a slightly smaller aviary some way—but not far enough—away. Green and White displayed and indulged in courtship-feeding throughout the Spring, but showed no serious nesting behaviour. This I think was White's fault, as her mate began a nest, which never got beyond the foundation stage, and I feel sure he would have built properly had the female shown interest.

Yellow also started a nest which was never completed. So far as I could see he and Blue were never really paired. At odd times one of them would make sexual advances towards the other, sometimes very fervently, but they never seemed to reach any sort of mutual "rapprochement". I think this was probably due to Blue's matrimonial ambitions still being centred on Green, whom she could, unfortunately, both see and hear.

When they started to moult the four were reunited in the large aviary, where they remained until early April, 1954. Once again the two hens had both bestowed their favours on Green. Blue was the dominant female, and had begun to make occasional attacks on her rival. This she was most prone to do, not when White was being paid attentions by the male, but immediately after she herself had been fed by him. In view of White's record, I decided to leave Blue with the favoured male, thinking that, poorish specimen though she was by comparison, she could hardly prove *worse* than White had done so far as reproduction was concerned.

On 18th April I moved Yellow and White to an aviary only a few feet away. This was done in the expectation that if the birds were fairly close the display of any one would be seen by, and perhaps help to give reproductive stimulation to, those in the adjoining aviary. As will be seen, these expectations were fulfilled, though not in the manner hoped for. Blue and Green left together continued to indulge



in much courtship-feeding. Prior to this Green had carried odd twigs and fibres to various possible nest-sites and in one—a smallish wire-netting “nest-bowl” fixed high up (but lopsided) under the roof—had constructed a slight and very rough nest-foundation. Both birds, however, spent much time flying restlessly to and fro, due I feared rather to a desire to get out and seek a more congenial nesting place than to any innate urge to exercise their wings. On the 23rd I noticed to my great joy that a lot more sticks had been added to the nest. Progress on it evidently continued on the 24th, and on the 25th (a Sunday when I was at home) the birds spent most of the morning selecting fibrous roots and taking them to line the nest. To my surprise they both did this freely in my presence. Blue—who was then quite prepared to tolerate me in the aviary so long as I did not look at any “forbidden areas”—coming eagerly near to my feet to sort over the roots I threw down, in great contrast to the shyness which White had shown when nesting two years before.

Some more work was done on the nest that afternoon, but no further building was observed, and I think the nest was finished on the 25th. On the 26th and 27th Blue spent much time sitting on the nest, and Green frequently fed her there. On 29th April, Blue went on the nest at dawn, and sat for most of the day, coming off for a long period in the afternoon and several shorter spells. I thought she must have laid but when I felt in the nest at 9 a.m. on the 30th, it was empty. The horrible idea occurred to me that she might be laying an egg each morning, and then eating or hiding it. After some indecision, I decided to try to remove the next egg so as to save at least one of the clutch if my fears were justified. Next morning I flushed Blue at 8 a.m. (she sat very tight and once off mobbed me more vehemently than she ever had before) and took a fresh-laid egg from the nest. This I placed under my old hen Common Jay, who was then incubating her own eggs, replacing Blue's egg with a Common Jay's. Needless to say, all this created a great deal of “alarm and despondency” so far as Blue was concerned, but she returned to her nest and proved my suspicions of her false by having two intact eggs in her nest the following morning. It is interesting that she had had a sort of “dress rehearsal” for the laying of her eggs from at least two days before the first was in fact laid. It will be recalled, however, by those who read my previous article that the female White behaved in this way on the day prior to that on which she laid, as Common Jays also sometimes do.

Blue sat very tightly, coming off the nest to bathe, preen, and exercise just before dusk and also, usually for shorter spells, at other times during the day. Green fed her attentively both on and off the nest. Their behaviour was similar to that previously described (Goodwin, 1953) for Green and White, except that Blue, both before and during



incubation often received or solicited food with appeal calls, or the chirruping notes, and when she used the juvenile begging note she did so much less intensely. Green now showed the same animosity towards wild Jackdaws that my Common Jays always do when they have eggs or young, attacking them furiously through the wire whenever they alighted on the aviary. He spent much of his spare time "in communication" with the exiled White, reinforcing her conviction that she was his and his alone, to my great annoyance. But of this more anon.

To my sorrow the egg put under the Common Jay proved infertile as, presumably, were two of the three under Blue. On the evening of 10th May there were still three eggs in the nest, but at 7 a.m. on the 19th, one young one had just hatched. It was naked and hideous and so far as I could see in a very hurried look, it seemed slightly deeper pink in colour than a newly-hatched Common Jay. But this may have been imagination, since I did not risk a close inspection. With Blue's hysterical curses ringing in my ears, I beat a hasty retreat, fearing that I might already have done enough to cause disaster. If, as seems likely, the only fertile egg was the last of the clutch, then the incubation period is 16 days, about the same as in our native species. In this connection it might be mentioned that although the Lanceolated Jay is much smaller than the Common Jay, its egg is only slightly so. Indeed, only by closely comparing size plus the slight (individual) colour differences when the eggs were lying side by side on my hand, could I be sure "which was which" of the eggs in the mixed clutch I had manufactured. Blue sat very tight for several days after the young bird hatched. I only risked occasional quick glances, with the aid of a mirror, at the young bird when she was off the nest. This invariably aroused her to a frenzy of mobbing. Finally, on 1st June, she screwed her courage up to the point of actual physical attack, swooping from behind and striking the back of my head. This she repeated on most subsequent occasions when I entered the aviary. To my surprise Green showed no overt resentment of my presence. Particularly amusing was the way in which he would calmly continue gathering, preparing, and engorging food for the young one without the slightest sign of anxiety, whilst his mate was "yelling her head off". As is the case with the Common Jay (Goodwin, 1951) the male bird at first prepared all largish or hard-bodied insects (such as mealworms) by carefully pulling them to pieces and discarding the harder parts before engorging them, when he was feeding the young one, although he had taken no such trouble when merely feeding the hen on the nest. He took ant pupæ and mealworms readily, also cockchafer and some lean meat when the young one was a few days old (they were not offered before), but refused to take greenfly, small beetles, or centipedes. When given leafy branches,





♂ WITH FOOD FOR YOUNG IN GULLET.

he would at once fly to them and search eagerly for caterpillars. Since caterpillars were few but greenfly many, I had thought and hoped the latter might prove acceptable, but no matter how thick they were on the branches, he ignored them. On reflection it occurred to me that the only birds I have ever seen eating these insects—which, unlike most others, could be procured in any number without search or trouble—are the House Sparrow and the phylloscopine warblers.

For safety's sake I indulged only in occasional and hurried looks



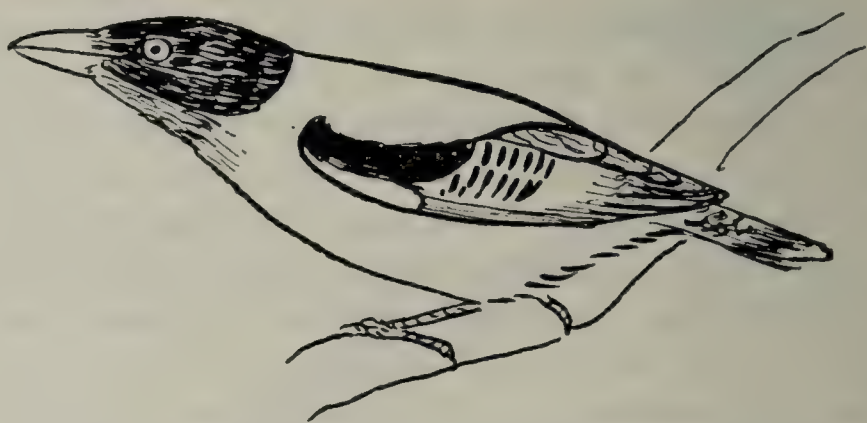
♀ BROODING YOUNG ONE 18 DAYS OLD.



at the young one. On 3rd June it was about half-feathered and lay in the nest, crouched immobile and gaping in fear in response to its mother's alarm cries. By this time my visits to the nest had resulted in Blue usually beginning to screech at me and to attack as soon as I entered the aviary. On 8th June the young one was fully feathered and was perched on the edge of the nest. For about a week previously Blue had spent much time off the nest, although still brooding the big youngster for about 50 per cent of the time and roosting on the nest at night. I think the young one first left the immediate vicinity of the nest on the morning of 11th June, when it was 23 days old. At 7 a.m. that morning it was hopping and scrambling about among some branches at the opposite end of the aviary. Green, like some anxious but rather incompetent human father in charge of a toddler, fussed nervously around it, oblivious of me, but Blue's only concern was the danger I represented and she mobbed me vehemently and unceasingly. Her behaviour was very similar to that recorded of the Beechey Jay (*Cyanolyca beecheyi*) when breeding in captivity (Sutcliffe, 1926). On the 12th the young bird was seen to be able to fly (with the usual rather fluttering and awkward flight of fledgeling passerines) from branch to branch without losing height. It returned to the nest edge to roost that night, and has done so since. This no doubt is due to its being a high and sheltered perch rather than to any innate tendency to use the nest for roosting after having once left it. At the moment of writing (15th June, 1954) the young bird is still spending most of its time in cover, although it can and does fly quite competently about the aviary. I think both parents are feeding it, although, owing no doubt to Blue's mistrust of me, I have only seen the male doing so. Unfortunately it is more influenced by its mother's warnings than by its father's indifference where I am concerned. It freezes as soon as Blue starts to screech, and when I approach it closely it hops and flutters away through the branches, using every time it pauses the same jerking "flight-intention" movements that an adult Jay does when mobbing. I am hoping that its present conviction that "mother knows best" will be ousted by experience to the contrary, as usually happens with juvenile *Homo sapiens*. Its hunger call is harsher, but at the same time higher-pitched than that of a young Common Jay, and as it is fed subsides into a similar eager gabble which is, I suppose, caused by the bird trying to call out and swallow at the same time.

The young one is a pale and rather dull edition of its parents, with shorter crest and the black and white markings on the secondaries less distinct. In one respect it differs from the specimens of juvenile *G. lanceolatus* in the British Museum. These all have the blue parts of the wings and tail of a pale bluish-grey, but in my bird they are of a similar azure blue as the adult. The skins in question are,





YOUNG BIRD (24 DAYS OLD) FREEZING ON PERCH.



YOUNG (25 DAYS OLD) ALARMED AND ABOUT TO FLEE.

however, all of older juveniles, and it is possible that the blue on my bird will fade to greyish later. On the other hand the food may affect the colouring. In the Common Jay unsuitable food may result in abnormal colouring of the juvenile plumage which is, however, in such cases always *duller* than the normal. Brightness of the blue parts seems to be a certain sign that food is suitable and feathering will be normal. My juvenile Lanceolated Jay shows every sign of being fit, and I take the brightness of its blue parts as a hopeful rather than a warning sign. Its bill and legs are a pale pinkish or fleshy grey instead of the grey of the adult. Its eyes appear a similar colour (dark brown), but I have not examined them at very close quarters. The skin of the eye-rims is paler and more conspicuous than in the adult, in which it is hardly visible.

Since the young one left the nest the pair have indulged in a good deal of courtship-feeding—although this never entirely dropped out—and Green displays a lot to his mate. He has shown signs of wishing to copulate, and has made frequent sudden attacks on Blue, which I think are caused by anger at his sexual impulses being thwarted.



Yellow and White in the other aviary have wasted the entire season. This was due primarily to White's faithfulness to Green. Despite barriers of wire netting and the constant sight and sound of her loved one bestowing his affections elsewhere, she remained

" True as the dial to the sun,  
Although it be not shined upon "

to her first love and ignored or evaded Yellow's early tentative advances. Whenever she heard Green offering to feed Blue she would fly to the nearest point of her aviary, cling to the wire, and call imploringly to him. Often at the same time Yellow, prepared food in his gullet, would be flying back and forth vainly giving the food-offering call. Had White ever "asked" him to feed her, I have little doubt he would have responded gladly, but she never did. Green, as has been hinted, was largely responsible for this state of affairs. Although when Blue was with him he had time for no one else, whilst she was on the nest he did not scruple to seek feminine company elsewhere. In fact he spent the greater part of his ample spare time on the perch nearest to White's aviary, his notes and actions leaving neither her nor I in any doubt about his feelings towards her. The birds have now (17th June) begun to moult, so it is too late to hope for any last minute change of heart between White and Yellow.

This breeding season has certainly been a case of "third time lucky", although as Green and Blue have proved such exemplary parents, it is the more annoying that three of their four eggs should have been sterile. This was undoubtedly Blue's fault, as I repeatedly saw her sidle or fly away when Green wished to copulate. Presumably her physical reproductive processes were a little ahead of the psychological ones that should have kept time with them. The two presumably infertile eggs remained in the nest for at least five days, but had gone on the ninth day. Evidently this bird, like the Common Jay, does not remove intact eggs until the young are well grown. Probably in both cases the eggs are removed only subsequent to the young breaking them.

#### FOOD GIVEN TO THE YOUNG

Since my feeding methods seem to have been successful, I give them for what they are worth. This could no doubt be improved upon by anyone with more cash or leisure. For the first two days after hatching I fed the male bird with fresh ant larvæ and pupæ (*Formica rufa*) or mealworms or caterpillars, but mostly ant pupæ, every hour or so. Thereafter I had to be away from home most of the day, and the regime was as follows :—

5 a.m. Fresh ant pupæ (about a dessertspoonful) given to male.

5.30 a.m. Leafy branches, with caterpillars on them, strewn on



floor of aviary (the male always searched these eagerly, but owing to the poor crop of caterpillars locally, I think he seldom got more than four or five at most).

7 a.m. Dish filled with mealworms to last day.

7 p.m. Ant pupæ to male.

8 p.m. Ditto.

After the first three days cockchafers were sometimes substituted for ant pupæ at the early morning feed. Three or four times during the period that the young bird was in the nest I gave the male shreds of lean beef which he fed to it. He probably caught some insects for himself in the aviary, and at least once he caught a mouse. The non-insect foods on the adult Jays' menu—wholemeal bread, peanuts, sop, etc.—were also given to some extent, but they were not, I think, used for the young one, except perhaps as a stop-gap, at least up to the time of its leaving the nest.

NOTE.—The diagrammatic sketches are merely intended to give a general impression of the birds, and have no pretensions to accuracy of detail. Nor are they quite to scale.

PS.—Those with experience of the ill fortune that so often dogs the aviculturist will not be surprised to learn that the above story has an *unhappy* ending. On 21st June, the young bird seeming now past all likely mishap, I ventured to go away on a short holiday. When I returned on 1st July, I learned to my horror that the kind neighbour who looked after the Jays in my absence had found it dead that very morning. It had been fit and well the evening before, and when found had severe wounds on its head which had cracked the skull. Presumably an Owl or some other predator must somehow have managed to seize it through the wire. The only slight consolation is that it did not die of any illness that I might have forestalled had I been at home, and since the bird was in every way fit and active previously, there is no reason to think the regime was at fault.

As the old Norse saying has it :

One's enemies one can overcome,  
God one can bribe,  
But against bad luck no man can do anything.

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## BREEDING OF GLOSSY BLACK COCKATOOS

By Sir EDWARD HALLSTROM (Willoughby, N.S.W., Australia)

The Glossy Black Cockatoo is the only Black Cockatoo that has proved really too difficult for the ordinary aviculturist or the amateur to raise from the baby stage after being taken from the nest. The feeding is so highly specialized that they gradually lose weight when given ordinary food. I had some failures until I commenced experimenting with matured birds to see if I could produce substitute food. It was no use putting food before them, they would starve themselves to death unless, of course, they were given food they were used to—the seed of the *Casuarina* tree. This is not easy, as for many years, particularly around Sydney, the wood of this particular tree (which burns with a great heat) has been used for bakers' ovens. Its use is now being replaced with newer methods of baking bread, but the inroads on the trees were so considerable that it was hard to locate the seed anywhere near to Sydney.

The seed is contained in a hard cone, and it is very difficult to extract it from the cone. Even when the seed has been extracted the birds will politely refuse to eat it—they must tear the cone to pieces themselves. This is tremendously important, as their mandibles have been especially designed by nature for dealing with the cones. If the birds do take to softer foods, such as sunflower seed, maize, etc., their top bill begins to extend, the bottom grows out in two long horns, and is very soon of no use to the bird whatever. It will be understood, therefore, that this was a real problem. As previously stated, in my experimental work I used matured birds, giving them just sufficient of the cones to keep their bills in trim, and fed them on a mixture of canary seed flour, plus peanut butter, and peanut oil. This was administered directly into the crop by means of a syringe and a rubber tube that was pushed down the throat. This could be accomplished with the greatest of ease provided, of course, one knew how to handle the bird.

My aim was to induce the creature to eat sunflower seed, or canary seed. Canary seed was useless, as it did not have sufficient oil, but the oily content of the sunflower seed made it more suitable. I calculated that if sunflower seed, plus some *Casuarina* nuts daily to keep their mandibles in trim, were used, it might be possible to keep these birds in captivity. The experiments were carried out over six years. Eventually a satisfactory method was found, and the birds now do well on the before-mentioned diet. Unfortunately, they cannot be tempted to eat any other type of food.

In my aviaries there are nine of these birds, and to feed them it is necessary for a man to drive, every day, into the country to gather



fresh nuts. Two separate aviaries were set up with a nice pair in each and suitable hollow logs were provided. One pair were noticed mating, but the other pair, although friendly, did not appear interested. Suddenly the latter pair produced one egg. Several days later another. The female sat closely, and in twenty-nine days hatched one chick. It was then noticed that the male was losing condition, and I am convinced that he had been starving himself in the feeding of the female who rarely emerged from the log. This really was a desperate position. After very careful observations, I decided to remove the male, and found he had really lost a lot of condition. It was necessary to recommence feeding him by injecting canary seed flour plus peanut oil directly into the crop. In a few days he was showing good progress, and was returned intermittently to the mother and youngster. It again appeared as though the double feeding was too much for him and although, at this stage, he had an ample supply of *Casuarina* cones, I found it necessary to remove him again.

At the moment of writing (1st June, 1954), the baby is over two weeks old and is being well cared for by the mother. The father, who is still separated from the female and the youngster, is now doing well again. A peep into the nest hollow this morning revealed a fluffy cream-coloured youngster about the size of one's closed fist. I am sure that this is the first time ever that one has been hatched in captivity. They are really a lovely bird, and I think it will be remembered in my talk in Sweden I described them as a Cockatoo which does not have a gizzard, similar to the other Black Cockatoos.

As feeding is so highly specialized and consists of a great amount of oil, it makes it most difficult to solve the problem of keeping them in captivity, let alone the successful nesting and producing of a youngster. From all appearances, the youngster is doing so well I am sure it will be successfully reared.

Additional note, 25th June.—The young Glossy Black Cockatoo is doing exceptionally well. It is in faultless condition (the mother having done all the feeding) and is now almost fully feathered and shows itself at the entrance to the nest. I did not return the male to his mate for fear of disturbing the progress the mother had made with the rearing of this singularly glorious youngster.

Further additional note, 20th August.—The Glossy Black Cockatoo has now left the nest, and is accompanying its mother to the food containers, and I should say has been successfully reared by the mother alone. The youngster has a considerable amount of down protruding through the now matured feathers on the head. The down is quite long and gives the bird an attractive appearance.

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## LONGEVITY IN PSITTACINE BIRDS

By W. C. OSMAN HILL (London, England)

In 1951 (AVICULTURAL MAGAZINE, 57, p. 37), I recorded an example of longevity in a Blue-fronted Amazon (*Amazona aestiva*). This individual, a male, had an authentic life of at least 50 years. Since then two other instances of aged Blue-fronts have come to my notice, and in one of them the history is as well evidenced as one ever hopes to get. Both far exceed my previous record. I give the protocols herewith :—

1. No. BP 269, male, received from owner 7th April, 1954 ; weight 292 gm. Last owner had kept the bird for 14 years and had published a note in *The Star* (1944) giving its age at that date as 87 years. Stated to have been in possession of immediate past owner for 42 years and in the same family before that for 37 years. Total 97 years. Post-mortem revealed the usual senile degenerative features.

2. No. BP 275, female, received from owner 21st July, 1954 ; weight 450 gm. Last owner had known the bird personally for 25 years, but it had been in his possession for only  $9\frac{1}{2}$  years. It had previously been in the possession of his wife's aunt, who had kept it for 19 years. This lady had received it originally from an old lady of 80, to whom it had been given as a present when she was 10 years old. Total age of bird, if the history is reliable— $98\frac{1}{2}$  years.

The owner had subjected the bird to euthanasia on account of its progressive weakness and loss of appetite. Post-mortem revealed the usual cardio-vascular degenerations, together with an abscess in the basal lobe of the right lung.

It is interesting to note the close correspondence in the total period of captivity in these two birds. This possibly represents, within a year or so, the potential longevity for this species. If this is the case, then Flower's (1925) statement to the effect that "a parrot, under favourable circumstances, may live to 20 years, though certain individuals have been known to live for over 50 years" needs revision.

Flower's oldest psittacine bird with reliable documentation was a Greater Sulphur-crested Cockatoo (*Kakatoe galerita*) of 51 years, but Aspinall (1933) recorded a well authenticated example of the same species as being accidentally killed after 109 years in captivity. A traditional record of 137 years 10 months for the same species is given by Hamerton (1943).

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## WOODPECKERS IN CAPTIVITY

By J. CARPENTIER

(Curator of Birds, Antwerp Zoo, Belgium)

Among the birds which generally cause a lot of trouble as far as the food is concerned, the Woodpeckers can certainly be mentioned first. Many aviculturists have indeed tried to keep these birds in good condition in captivity but, apart from a few exceptions, with very poor results. Although some fanciers have managed to keep one or more of these birds for some time, it cannot be said that they did so with entire success.

Now chance has brought us a way of feeding these birds, which up to the present has given us complete satisfaction, and therefore we wish to communicate this to our fellow-aviculturists, trusting that it will be of some use to them in taking care of their feathered pets.

Early last year, we were informed that a sailor had brought from abroad a very beautiful, finely coloured bird, of which he knew neither the name nor the country of origin. It lived mainly on fruit (oranges and bananas), and some insects.

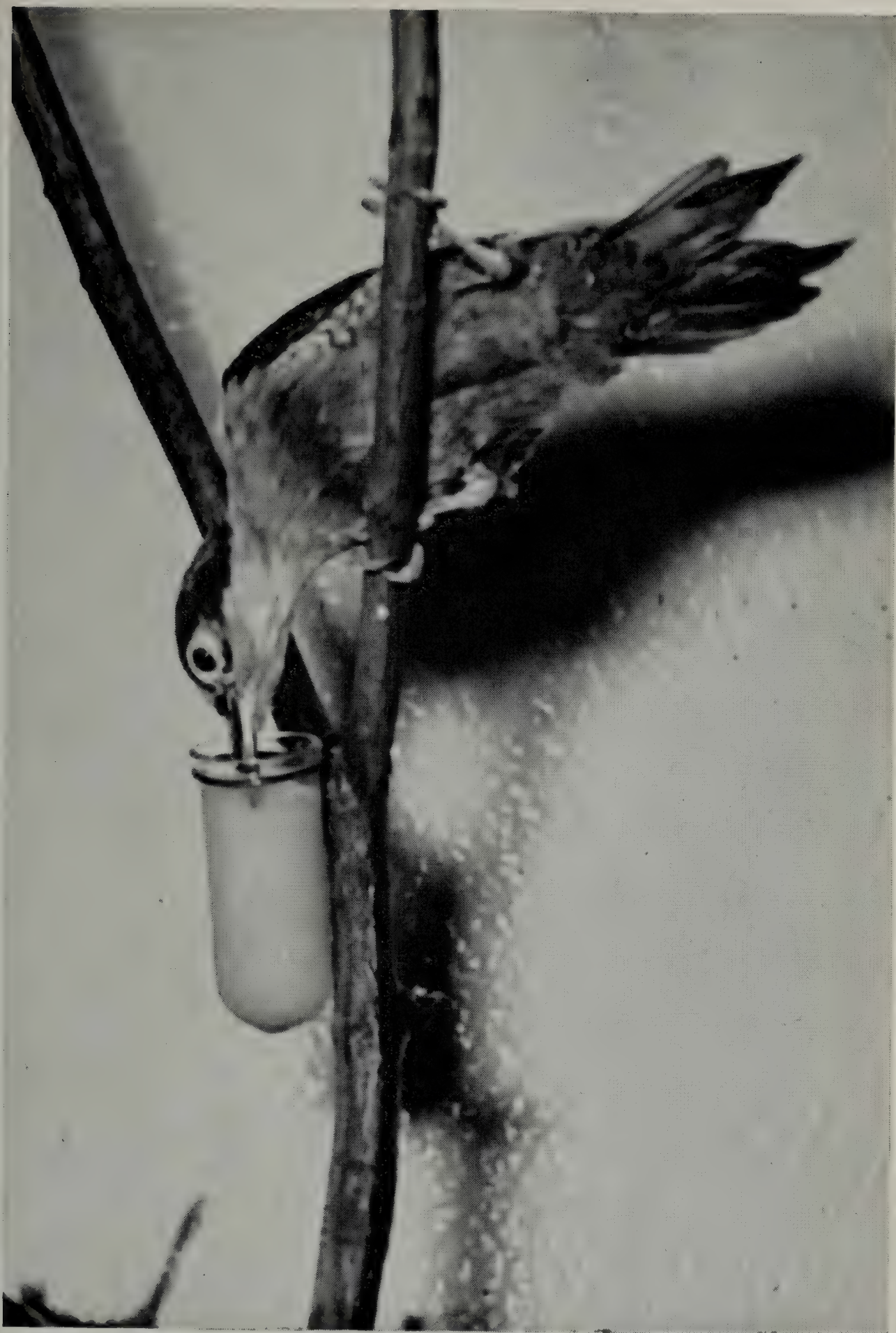
We hastened to have a look at the bird, and found that we had to do with a *Melanerpes flavifrons* (Vieillot), i.e. a Golden-fronted Woodpecker from Southern Brazil and Paraguay.

It was a rather lively bird, which did not seem to have suffered very much from the long voyage. We soon struck a bargain, and we were able to add this new species to our collection. The bird having come into our possession quite unexpectedly, we had not been able to prepare a suitable cage. So we were forced to house it provisionally in the cage of a couple of *Nectarinia famosa* (Lin.), in which we had quickly erected a fragment of a tree trunk, so that the bird could perch at ease.

After the arrival of the new guest, both it and the Sunbirds fluttered anxiously around the cage for a short while, but they very quickly settled down, and were visibly satisfied that each of them could go its own way without caring too much about its companions.

After having observed the Woodpecker for a couple of hours, during which time it swallowed some fifteen mealworms and pecked greedily at the orange, we left the birds to themselves, fully convinced that things were going as smoothly as could be expected. Next day everything was going on just as perfectly, but in the afternoon the keeper informed us that our Woodpecker was drinking the liquid food of the Sunbirds, i.e. the food of the Nectaridae. We were of course surprised, but the news pleased us enormously, because we hoped that this would be a way to give our new acquisition more varied food. We placed a few more drinking troughs in the cage, and awaited further developments with interest. After one week we were quite





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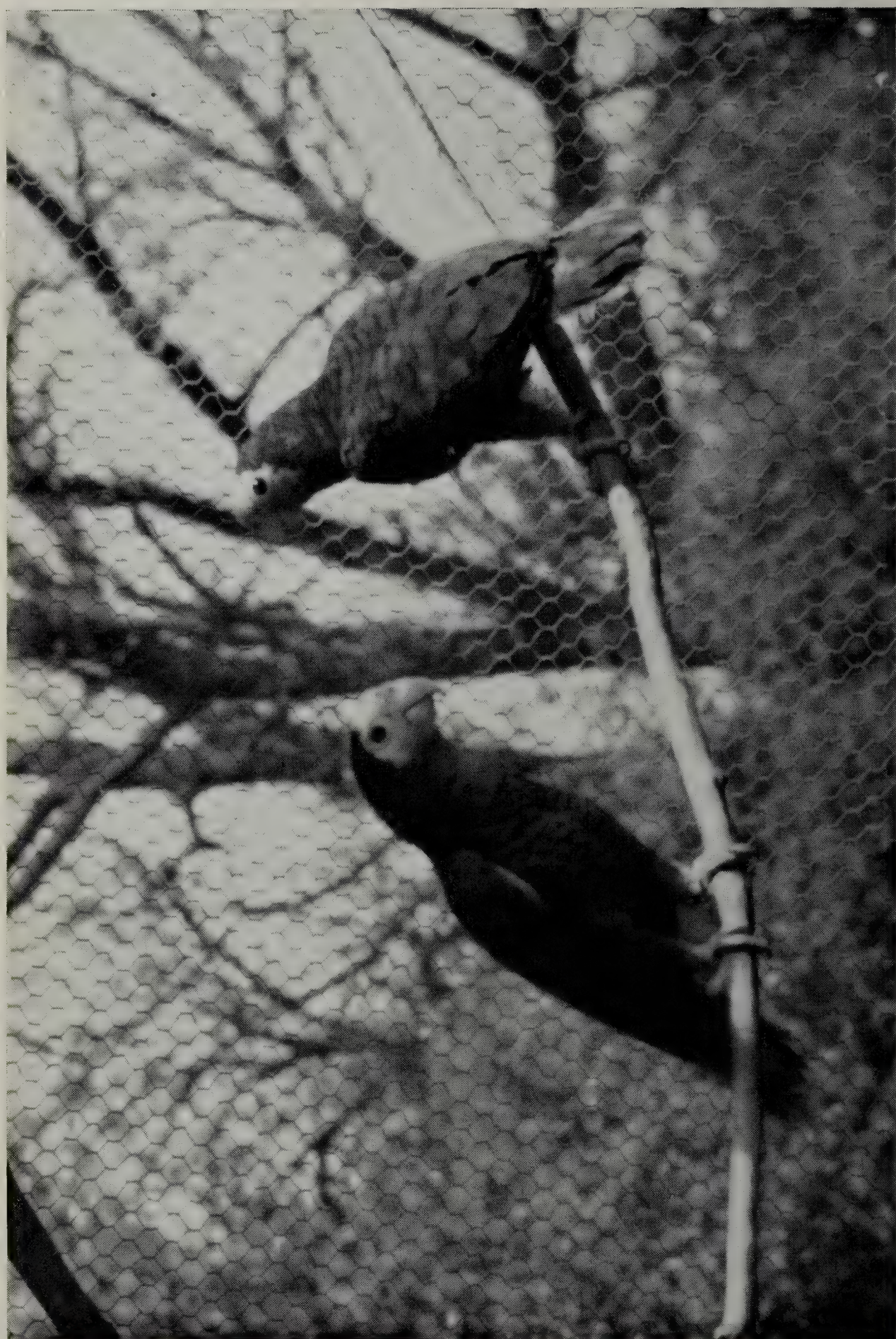
*[Photograph : Antwerp Zoo*

GOLDEN-FRONTED WOODPECKER TAKING LIQUID FOOD PROVIDED FOR  
NECTARIDÆ.

*[To face p. 166*



AVIC. MAG. 1954.



[Alec Brooksbank

CUBAN AMAZONS.

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To face p. 167]



sure that the liquid food, intended for our Nectaridae, had also become the main food of the *M. flavifrons*. The bird is always quite ready to swallow some ten mealworms, but it completely disregards all fruit since it has tasted the Nectaridae food.

We have also tried this liquid food with a Hoopoe, and found that this species accepts it quite willingly as well, but does not consider it as its main food. Since we have given it our liquid mixture, the health of the bird has, however, considerably improved.

The birds are still in excellent health, and we should be glad to learn from other aviculturists whether they have already had some experience with liquid food.

Our liquid food for Nectaridae consists of:—Water, 1 litre; glucose, 75 grams; liquid honey, 120 grams; condensed milk, 75 grams; Mellin's food, 40 grams, and, every day, a knife-point of meat extract, every week a bit of charcoal mixed with the rest.

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## CUBAN AMAZON PARROT

(*Amazona leucocephala*)

By EDWARD BOOSEY (Keston, Kent, England)

The Cuban or White-fronted Amazon, although, before the parrot ban, the most frequently imported of the small group of Amazons having white or pink on the face and throat, and a rather dark green body colour is, nevertheless, a rare species in captivity.

It is a very handsome bird of a rich darkish green, yellowish on the tail-coverts. The forehead is white, while the cheeks, and a large but somewhat irregular patch on the throat, are of a beautiful deep coral pink. The feathers of the forepart of the body are bordered with black, the width of the borders increasing in the region of the head and neck and upper part of the breast. Behind the pink cheeks is an area of very dark slate grey. There is some wine colour on the abdomen and the tail is yellowish-green, the outer feathers having a large red patch near the base. The outer webs of the flights are rich Prussian blue. The bill is whitish and the legs oatmeal colour. Total length twelve inches or a little over. The bird has the appearance of being slightly smaller and slimmer than a Blue-front.

I do not find them particularly easy to sex, but I should say that hens have a slightly smaller and more irregular area of pink on the throat, but a rather larger and more extensive area of vinous on the abdomen.

During the brief period of the lifting of the parrot ban, we received six of these Amazons at the Keston Foreign Bird Farm. Two of them died—one from a fit, and the other through an accident—but the remaining four have done extremely well.



As I believe they have the reputation of being somewhat delicate, their aviary shelter was heated during their first winter. Since then, however, they have wintered successfully without heat, though it should perhaps be added that their aviary is in a very sheltered position, facing due south. Only during the winter months, however, are they shut into the shelter each night.

They are delightful aviary birds, being strong fliers, and altogether very lively and active. They are also very vocal, uttering both morning and evening a wonderful medley of typically Amazonian cries. These, however, while very attractive when heard from a distance out of doors, might prove rather deafening indoors, and this is one reason why I think these Amazons more suited to aviary than cage life.

If they have a disadvantage, it is that they are so terribly shy and wild.

For weeks they became completely panic-stricken if one went anywhere near their aviary, but now at last they have calmed down a bit, and one bold spirit—a male I think—will actually take a slice of apple from my fingers, watched apprehensively in the background by what I take to be his wife, who obviously considers it a most risky proceeding! The other two think it more prudent to retreat at once into the shelter, until all danger is past.

Cuban Amazons have a curious display which consists of the male thrusting forward and slightly lowering his wings, thus bringing into prominence the wonderful blue in the flights and, at the same time, making a sort of mock-serious token lunge at the female.

Their seed mixture should consist mainly of sunflower, with a few monkey nuts, and a little canary, groats, and hemp. Twice a week we give ours a few cubes of stale bread, previously soaked in sweetened, slightly watered milk. As to fruit and green food, Cubans are very fond of apple, and also of spinach beet, particularly the fleshy stalks of the Seacale variety.

They have the reputation of possessing but little aptitude for learning to talk.

As far as I know Cuban Amazons have never been bred in captivity, but there is a Continental record of the breeding of a hybrid between this species and a Blue-fronted Amazon.

The accompanying photograph of two of our Cubans at Keston was taken by my partner Mr. Brooksbank only with the greatest difficulty. At first, alarmed by the appearance of a camera in their aviary, none of them would stay still for a second. Eventually, however, after considerable patience on the part of the photographer, two of them remained still just long enough for this photograph to be taken.

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# THE COURTSHIP BEHAVIOUR OF THE CUTTHROAT FINCH

(*Amadina fasciata*)

By DESMOND MORRIS (Department of Zoology, University Museum,  
Oxford, England)

## INTRODUCTION

In the past birds have been classified largely on the basis of their structures and colours, but recently there has been a growing tendency to analyse the relationships between bird species by also making particular use of the specific behaviour patterns exhibited by them. The best conditions for behaviour studies of this sort are undoubtedly those in which large numbers of closely related species are kept in captivity in cages or, preferably, aviaries. For, as Konrad Lorenz (1954) has pointed out, when one is making a detailed inventory of all the specific behaviour actions of a number of species of birds, one has to live with them day after day over a long period of time. Lorenz has even gone so far as to say that "it is really impossible to gain the necessary knowledge by observing animals in the wild state". Many field ornithologists will disagree with this, but I feel that it depends on the type of study one is making. If, as Lorenz was doing with his ducks, you are studying a large number of closely related species, then the possibility of slight distortions of behaviour resulting from the conditions of captivity will only be a small disadvantage, for the time and labour involved in travelling all over the world to observe the many species in the group under investigation, would make such a study exceedingly difficult. If, on the other hand, you are making a detailed study of one species, then it is probably better to study it in its natural habitat, as Niko Tinbergen (1953) has done with the Herring Gull.

The earlier investigators, who were interested in classifying bird species, were able to carry out most of their work in museums, with hundreds of skins of birds arrayed on their desks. But they overlooked the fact that to classify living things on the basis of dead objects involves a serious omission!—namely, of course, BEHAVIOUR. Nowadays, as the result of the work of such pioneers as Heinroth, Whitman, and Lorenz, specific behaviour characters are treated with the same respect as structural characters, from this point of view. But although behaviour characters are thought of with respect to-day, there are, even so, too few actual investigations of this type made. This is probably because it is more difficult to observe, measure, and record a behaviour pattern than, say, a colour pattern. For this reason, a combined investigation has been planned, and already begun, to analyse the relationships of a group of birds using information obtained



from recording their structures, behaviour, genetics, and geographical and ecological distributions. When all this information is pieced together, the result, it is hoped, will give as clear a picture of their evolution as is possible.

Because the study of the behaviour of a large number of closely related bird species necessitates the use of a large number of aviaries, the choice of species for such a study is narrowed down immediately to very small birds—for spacial economy—and to species that are easily available. This leads inevitably to the Mannikins and Grass-finches, which breed readily in captivity and which have simple food requirements. The work that has been done so far has been concentrated on a few species, and now that this initial reconnaissance has proved successful, a much wider range of species is being obtained and investigated.

### THE CUTTHROAT FINCH

One of the first species studied in the present investigation was the Cutthroat Finch. This species has been bred in captivity as long ago as the eighteenth century, and is particularly hardy. It occurs in East, West, and Central Africa, and is replaced in South Africa by a very closely related species, the Red-headed Finch (*Amadina erythrocephala*). Although these two species are at present classified with the Mannikin tribe (*Amadinæ*), they are rather different from the typical Mannikins. The male is very distinctly different from the female, whereas in all the typical Mannikins, the sexes are alike. Also the mottling of the light brown plumage is rather unlike that of other Mannikin species. A third difference is that the nestlings of the Cutthroat Finch do not exhibit the characteristic horseshoe-shaped marking inside the mouth. All Mannikins, in which nestling mouth-markings are known, possess the typical horseshoe-shape, but the Cutthroat nestling shows large blotches inside its mouth instead. These and other facts make the Cutthroat a particularly interesting species to study ; for, since it does not fit any too easily into its present taxonomic position, any new data concerning it may help to improve the way in which it is classified. In the present paper, however, I will confine myself more to a discussion of the displays which this species uses in its courtship behaviour, because until we know more about the behaviour of many of the Mannikin species, it will be impossible to make any statements about the possible evolution of the group. This stage has yet to be reached. In the meantime, it is very profitable to look at the courtship displays for their own sake.

### THE SONG-AND-DANCE OF THE MALE

The male Cutthroat differs from the female in appearance by having, not only the famous "cut-throat", but also a dark brown



patch over the belly region. However, owing to the startling sex-difference provided by the red throat-patch, the brown belly-patch is seldom referred to. It is nevertheless important, in the display of the male to the female, immediately before copulation.

The male birds, when in full sexual condition, sing almost incessantly. During most of their singing, they pay no attention to the females, and do not orient themselves towards them. Throughout this singing, the heads of the males are swung smartly and distinctly from side to side.

In this species, as in several related ones, it has become quite clear that this song does not have the same function, nor, apparently, the same causation, as in many other kinds of birds. Typical song has the effect of intimidating rivals—warning them off a territory, or disputing a boundary—and of attracting females. It is primarily aggressive. In the Cutthroat, the song appears to have not the slightest threatening effect on other males, but, if anything, rather attracts them to the singer. Also variations in aggressiveness and singing seem to bear no relation to one another. This may be due to the distortion of life in captivity, or it may be due to the fact that all this group of birds have become semi-social and may nest together in close proximity under circumstances that would make ordinary song and territorial behaviour a hindrance.

Although song may be given by Cutthroats when several birds are sitting together in one part of an aviary, it is more likely to occur when a male is left alone, for example, when all the other birds are down on the ground feeding. In the case of the Java Sparrow (*Padda oryzivora*), which is also a member of the Amadinæ, I only ever heard a male sing when it was left alone by its mate. The Java Sparrow song was very infrequent, however, and it appears that as the frequency of singing increases, so the males may sing even when their mates are sitting next to them on a branch, although even under these circumstances it is still possible to detect that the song is more likely to occur when no other bird is close at hand.

In the case of the Cutthroat and its relatives, the song is also included as an almost non-stop accompaniment of the courtship dance of the male. This courtship singing differs from the type described above mainly in that the male now orients himself towards the female and specially directs the singing *at* her, instead of into space. As he sings, so he advances along the branch towards her. If she is unresponsive and does not intend to be mated with, she hops or flies away at this point. If she is moderately responsive, she remains still on the branch as the male advances, her feathers sleeked, ready for a quick take-off if necessary. If she is very responsive, she reacts to the song and dance of the male with an invitation display. If she gives this, it acts as a signal to the male that she is ready to copulate



with him. He responds by mounting her, their cloacae are brought into contact, and insemination takes place. The male then dismounts and usually both birds shake and preen themselves.

But what is the precise nature of the movements made by the displaying male as he dances to the female, and what exactly is the significance of the invitation display of the female? All too often, such displays are described simply as "comical antics". They are, however, much more than this to the birds concerned, being specific signals which indicate the mood of the individual performing them. Just as man-made signals, such as traffic-lights, must be quite precise and rigid, so that their meaning cannot be misconstrued, so it is found that animal signals are also quite fixed and rigid in form. In the evolution of a species, a particular display movement becomes uniquely associated with a special mood of the performer. Just as the green light of a traffic indicator means exclusively GO to the motorist, so the invitation display of the female means MOUNT to the male. Just as the green light signifies that the cross-roads are clear for the motorist to continue, so the invitation display of the female bird signifies that she is ready to be mounted and will not flee. The question remains as to why one type of display, rather than another, should be performed by any one species in any one instance. Before answering this it is necessary to describe the display of the Cutthroat in some detail.

#### THE INVERTED CURTSEY

As the male advances towards the female, he assumes an upright posture, which is much more vertical than his normal stationary pose. Also, his feathers are raised in a special way. Most of his feathers are somewhat raised, but his ventral feathers are not all raised to the same degree. Careful observation shows that the feathers in the ventral region are differentially raised in such a way as to exaggerate and enlarge the brown belly-patch to a maximum. This has the effect, viewing the bird frontally (as does the female Cutthroat), of displaying the brown patch efficiently during the advance. It is so swollen that the lower belly feathers reach down beyond the branch on which the male is standing. Seen sideways, the bird appears to have grossly over-eaten, there being a large brown swelling in the belly region! As the male advances in this posture down the branch towards the female, it gives a rapid series of dance movements every few hops it takes. It advances a little way, then, pausing, stretches and bends its legs very rapidly a number of times in quick succession. The body is held at the same, rather vertical, angle as it is raised and lowered, and the general effect has been likened, by certain authors, to the human curtsy. But a correction is necessary here, for the first element of a human curtsy is a *downward* one. The legs



start stretched and then bend and then straighten again. But the reverse is the case with the Cutthroat. It begins with its legs bent, straightens them, and then bends them again. Then, without pausing, it repeats this action a number of times in rapid succession. Then it stops dancing and hops nearer to the female, only to repeat the whole performance over again. Each little dance is therefore *a series of inverted curtseys*. But why should the dance take this particular form? By studying many such displays and movements, the general conclusion that has been arrived at is this. Animals often perform low intensity versions of activities which do not lead to the completed act, but which one can nevertheless recognize as being its first stage. For example, when a man gets up from an armchair he leans forward and places his hands on the arms of the chair and then rises. If one watches the whole action take place a number of times, it soon becomes clear, even if one only sees the man lean forward in the characteristic manner, that he intends to get up. Thus the first sign that he is going to get up is not actually seeing him rise, but seeing the *intention movements* of rising. Footballers and boxers, for example, make great use of the fact that human beings react very keenly to intention movements. For instance, a footballer pretends to kick the ball to the left and then, while his opponent is reacting to that intention movement, he kicks it to the right. Reactions to intention movements are very common in birds, and, in evolution, it appears that certain intention movements and the appropriate responses to them have become "fixed" as special inborn signals. Not only that, but they have also become modified—usually exaggerated in some way—and now have the quality of rituals. During this process of ritualization, the original intention movement, from which a signal has been formalized, is often obscured by the now wildly exaggerated version in which it is seen. But in the case of the Cutthroat, and in a number of other cases, ritualization has not gone so far as completely to mask the derivation of the display. For, if the dancing male Cutthroat is observed closely, it will be seen that the upward movement of each inverted curtsey is sharper, quicker, and more forceful than the downward movement. This can only mean one thing, namely that each series of inverted curtseys is a series of intention movements of jumping up, and as the male is facing the female, and, further, as the courtship ends with the male jumping on to the back of the female, the jumping up in this case must mean mounting. Therefore I interpret the dance of the male Cutthroat as a series of intention movements of mounting the female.

But why, in the first place, should the male have been making only intention movements to mount? There are two possible answers here. The first is that the sexual tendencies of the male may have been thwarted by the female refusing to give any indication of readiness



to be mounted. In his sexually aroused, but thwarted, condition, the male may then have kept on starting off the mounting action, but never quite completing it, until finally the female gave the invitation signal. It is easy to see how this situation could have evolved into the present one. Alternatively, there is considerable evidence that the male is afraid of approaching close to the female when he is courting her. His upright posture and his hesitant advance, for example, lead one to think of his mood as being basically a conflict between a sexual tendency to mount the female and at the same time a tendency to flee from her. The reason for the intention movements could, therefore, be that the male has to overcome his inclination to flee from the female.

This second explanation applies more clearly in a related species, the Zebra Finch, which I have studied in rather more detail. In this species, the male also performs a song and dance as he approaches the female, but, unlike the Cutthroat, he does not give the inverted curtsey dance, but a lateral pivoting dance instead. He swings his body from left to right as he advances, and as he does so, swings his tail round even farther than his body, so that it is displayed to the female. The male Zebra Finch also holds himself in an upright posture and shows signs of being hesitant in his advance towards the female. Each of the lateral swings of his body can be thought of as intention movements of turning away from the female to flee from her. The male turns away to the left as if to flee and then, his sexual tendency getting the upper hand, he swings back towards the female again. But this brings him closer to the female, and his tendency to flee increases again and he turns away to the right, and so on.

Specific differences, such as the one described above, between the dance-types of the male Cutthroat and the male Zebra Finch are very helpful indeed in determining the relationships between species. Work is going on at present to ascertain the dance-types of as many species of Mannikin and Grassfinch as possible. It must be stressed that a difference or similarity in such a behaviour character as dance-type is just as reliable for classifying the species concerned, as is the colour or marking of their plumage. In fact the two types of character are often related, as I hope to show below.

#### THE INVITATION DISPLAY

Returning for a moment to the display of the female Cutthroat; when the male has danced to her for some time, she may give the invitation display which consists of placing herself in a horizontal posture, couching low over the perch. She then proceeds to quiver her tail in a series of immensely rapid vibrations. They are so rapid that, until they have been filmed in slow motion, it will be impossible to analyse them fully. The main path of the vibrations, however,



appears to be a vertical one, but it is by no means as simple as that. I said earlier that sometimes movements become ritualized to such an extent that they are difficult, if not impossible, to relate to their origins. This female display is just such a case. It is, in fact, the most completely ritualized movement I have ever observed, and I can only guess at its origin. Tentatively, it can be suggested that this is a very rapid series of ritualized intention movements of fleeing, presumably prevented from developing into actual fleeing by the conflicting sexual tendency to remain near the male. In support of this, the female is in the horizontal posture typical of the take-off before leaving a branch. Also, flicking of the tail is often seen as part of the usual take-off intention movement.

Again, here is a problem which will probably best be solved by a wide comparative study of a number of related species, for there is quite a chance that some species will not have ritualized the action to such a degree and that its origin will then become clearer. Lorenz found this in many cases with his ducks. Unfortunately, all species of Mannikin and Grassfinch, in which I have observed the female invitation display so far, appear to be equally ritualized. (But there are many more species to be observed yet!)

#### THE DISPLAY MARKINGS

Finally, something must be said about the nature of the bright colours and vivid markings which are used in display.

It is dangerous for animals to be too conspicuous because it renders them too vulnerable to predation. Many animals are completely cryptic and show no bright colours or markings at all, but a number arrive at a compromise. They can be cryptic or conspicuous as the occasion demands. The one way of doing this is to possess a transformation display of some sort, such as the inflation of pouches, air-sacs, and the like, or to change colour during the breeding season, risking the danger of attracting predators only during that time of the year, in order to be conspicuous in display. The other way of compromising is to be cryptic over that area which the predator normally sees, and conspicuous over that area which the mate, or rival, normally sees. This latter method is the one adopted by all the Grassfinches and Mannikins. They are all cryptic from above, so that when a flying predator looks down at them from above, say, feeding on the ground, he cannot see them too clearly. All the Grassfinches and Mannikins, as far as I know, without exception possess back and wing plumage colour which merges with their natural environments. Their ventral surfaces, however, are a different question altogether. Here one finds bars, spots, bands, and patches of colour and intense contrast. These are displayed to the female by the courting males, and it is remarkable to note how frequently



the particular patch of colour or contrast, possessed by a particular species, is displayed so well by the special dance movements and posturings of that species. I will use the Cutthroat and the Zebra Finch as two excellent examples of this. The former has a *frontal* brown patch on its belly, and a *frontal* red patch on its throat. Its display is performed *facing* the female, and the male fluffs out its brown patch to the full, and then proceeds to shake it up and down at the female. In the case of the Zebra Finch, the male keeps on turning its sides to the female, and thus displays its white-spotted, chestnut-coloured, flank feathers, which, although normally carried inconspicuously inside its wings, are now fluffed outside them for the occasion. Also, the male displays its chestnut ear-patches, one after the other, as it pivots in front of the female. The twisting of its tail, through an angle which makes it clearer for the female to see, also displays a special marking, for the tail of the Zebra Finch is banded, with intense contrast, in black and white.

A study of many such correlations, between bright markings and display movements, has revealed that it is a general rule with animals ; and further, that it seems likely that the movement has preceded the colour in evolution. This is borne out by the fact that many species of a group often show a particular movement, but not all have developed a bright marking which can be displayed by it. It seems that when a particular organ, such as the tail, is moved about in display, any mutations which occur which make the tail of that species more conspicuous, will be strongly favoured, since they will draw, even more, the attention of the opposite sex to the displaying individual. It is unnecessary to mention in detail the bizarre extremes to which some species have taken this principle (Birds of Paradise, Pheasants, etc.). Most species do not go too far because, as stated above, predators as well as mates are likely to be attracted !

#### CONCLUSION

I have attempted to give some idea of the type of bird behaviour analysis that can and is being carried out using some of the commonest of aviary birds. This work is expanding rapidly at the moment and, as a result, it is hoped that when a greater number of species has been studied, both the interrelationships between the various species, and the organization of their reproductive behaviour systems, will be more clearly understood.

From the point of view of the classification of the group, the production of hybrids is of the utmost importance, in order to obtain some idea of their genetical make-up. Many Mannikin and/or Grassfinch hybrids are reported in the literature, but photographs of them are rare, and descriptions are often too brief to be of much use. It is hoped that, in the next few years, it will be possible to produce a large



variety of hybrids, with the aid of artificially increased day-lengths and, if necessary, injections of sex hormones. However, this will undoubtedly be a slow process, and it is also hoped to obtain valuable information from some of the many private breeders of these birds, who may already possess just those hybrids in which we are most interested.

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## FOREIGN DOVES IN A DORSET GARDEN

By DOROTHY A. JAKOBSSON (Ferndown, Dorset, England)

The sadly neglected dove family contains many a bird of great beauty and loveliness. From the humble Barbary, with its laughing call, gentle coo, and sober Quaker-like dress, to the more exotically clad Green-wing with ruby bill and sparkling, vividly green plumage. The dainty little Harlequin's moth-like flight has a charm which must be seen to be believed—misty grey above and gleaming cinnamon beneath, and in the cock, the orange and red bill foiled by its black mask. The blue-grey, brown-flecked English Turtle-Dove's almost purring note harmonizing so wonderfully with the sharp pheasant-like call of the Vinaceous Turtle-Dove and the treble coos of the dainty little rosy pink Senegal and the Necklace Doves. The latter with its deep checkered collar and crimson ringed eye. How can anyone say that the dove's song is monotonous? Why, no two birds—even of the same species—coo exactly alike.

Last year, two of the fawn Barbarys gave me a little white nestling as a fellow to a fawn one. Also I believe I have an albino Barbary. The difference between them is that the first bird has the space-collar and yellow eye-ring of the "Java", while the second has no suspicion of a collar and a cream eye-ring with eyes that flash red in the sun's light. Also I was lucky enough to breed two Barbary  $\times$  English Turtle hybrids.

Though perhaps few doves are brilliantly coloured (those which are, are outstandingly so), all have a soft harmony of colour that would be the envy of any dress designer and quite vies description with their soft merging and mingling.

All the above-mentioned birds live quite happily in eight unheated, grassed aviaries in a shrub planted plum orchard. The whole garden is very well sheltered by pines, rhododendrons, a privet hedge, and a gorse-topped turf bank, which does much to keep at bay keen winds.



There is also a largish goldfish pool, with pink and white water lilies, and tiny artificial stream.

The houses of the aviaries are made of tongued and grooved wood with heavy roofing felt on the roof, and on their north and east sides for extra protection.

The birds are mainly fed upon split maize, paddy rice, and millet, with sugar sprinkled bread and milk for all nesting Doves.

Rock salt somehow seems to increase the bloom on the bird's plumage, and tends to intensify the colour, and we feel it is absolutely necessary for the Green-wings. In their native home, I am told, they frequent the salt-licks and it is believed there they die if they are denied access to them for more than twenty-four hours.

As the doves are gathered from many countries, so are the trees and flowering shrubs which surround them, and do so much to provide a beautiful setting. The Bird Cherry blossoms beside the Indian Catalpa Bean, Canadian and Japanese Maples, are backed by the evergreens of Northern Europe, and the Liquidambers of America glow among the silver birches and oaks of England. Rhododendrons of many colours blossom in their appointed season. The wisteria of distant China clings and rambles among the branches of our native apple trees, one of which has mistletoe "in its hair".

Goldcrests nest in the cedars, Sparrows in the ivy and tits—of various kinds—in specially set-up nest boxes. Robins and Hedge-Sparrows are housekeeping in the gorse bank. A vent pipe has made a rather odd home for a pair of Starlings. Thrushes have reared a family high up on the rhododendrons. Blackbirds and the Green Woodpeckers, too, have nests somewhere in the garden. Brown squirrels gambol among the Scots pines where the Wood-Pigeons are nesting. A Nightingale, in summer, often sings in the apple tree beside the window, but they have not nested in the garden. We do wish they would!

The other day, when the doves were softly cooing, we were much amused to hear that a little girl visitor—staying in a nearby house—ran indoors calling out, "Auntie, Auntie, the lady over the hedge has a garden that's simply full of Cuckoos!"

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## LONDON ZOO NOTES

By J. J. YEALLAND

An interesting and curiously coloured Plantain-eater, the Uganda Black-faced (*Crinifer personata leopoldi*), was brought back by Mr. Seago during July. It belongs to the sub-genus *Gymnoschizorhis* of which, as pointed out in recent correspondence, there are two forms. The body colour is of soft pale shades of grey and brownish-grey, the neck is white, and there is an incongruous looking patch of green on the breast.

A Varied Thrush (*Hesperocichla navia*) has been deposited. This and the Plantain-eater are new to the collection.

Presentations include a Martial Hawk Eagle (*Polymætus bellicosus*); three Squacco Herons (*Ardeola ralloides*); a Common Heron (*Ardea cinerea*); a Bank Myna (*Acridotheres ginginianus*), and fourteen Budgerigars, six of them trained "homing" birds from Mrs. Upton's flock.

Two Black-chinned Yuhinas (*Yuhina gularis*); five Green Imperial Fruit Pigeons (*Ducula ænea*); three Nicobar Pigeons (*Calænas nicobarica*), and a Narcissus Flycatcher (*Xanthopygia narcissina*) have been deposited.

Purchases consist of a One-wattled Cassowary (*Casuarius unappendiculatus*); a King Bird of Paradise (*Cicinnurus regius*); a Uganda Brown Parrot (*Poicephalus meyeri*), and twelve new Humming-birds—Ruby-crested, Stripe-breasted Star-throat, Pucheran's Emerald and Blue-chinned Sapphire.

A Lineated Finch (*Sporophila americana*) and an Abyssinian Lovebird (*Agapornis taranta*) have been received in exchange.

The birds so far bred in the Gardens include three Mallard  $\times$  Red-crested Pochards; four Red-crested Pochards; seven Lady Amherst's Pheasants; six Golden; two Reeves'; two Swinhoe's; one Mongolian and a White-crested Kalij; also a Ceylon Jungle Fowl; two Crested Pigeons; one Barred-shouldered Dove; one Green-winged Dove; three Chinese Painted Quail; a Silver Gull and a Lesser Black-backed  $\times$  Herring Gull. Last year's young of this "hybrid" were ringed so that we can observe the adult plumage.

Perhaps the most interesting nesting event was that of a pair of the Tawny Frogmouths in the Australian Collection. One egg was laid and it contained a chick which had died when nearly ready to hatch.

The breeding pair of King Penguins' egg was infertile. As is well known, these birds moult just before the breeding season and choice of mates is dependent upon the time that the individual birds moult. The breeding female preferred her old mate, though he did not moult until some time later than she, and it may have been that he was not ready to breed at the time the egg was laid. One of the new females also laid and the husband appeared to be the bird



bred here in 1952—at any rate, he took his turn at incubating the egg, but after a few days it was somehow broken. It could scarcely have been fertile, for observations at Edinburgh show that these Penguins do not breed until the fifth year.

The report that a young Green-winged King Parrakeet hatched at the Parrot House had been destroyed by vermin is incorrect. Mice have been exterminated, and the very few rats in the Gardens do not get into the parrakeet aviaries. The old breeding pair of Green-winged Kings have a fine young one which has just left the nest.

The "homing" Budgerigar aviary is now completed and contains some fifty birds.

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## BRITISH AVICULTURISTS' CLUB

The forty-third meeting of the Club was held at the Rembrandt Hotel, Thurloe Place, South Kensington, S.W. 7, on Wednesday, 8th September, 1954, following a dinner at 7 p.m.

Chairman : Miss P. Barclay-Smith.

Members of the Club : Mrs. H. G. Alderson, W. D. Bell, Miss K. Bonner, Captain A. Clarence, G. T. Clark, Mrs. G. T. Clark, A. H. D'Aeth, A. Ezra, Miss S. A. Fothergill, J. C. Garratt, H. J. Harman, Dr. E. Hindle, Miss S. I. Hobday, Major E. F. Housden, Mrs. H. Ingram, Miss E. M. Knobel, Miss M. H. Knobel-Harman, Dr. F. B. Lake, G. S. Mottershead, K. A. Norris, Miss E. G. Perry, A. A. Prestwich, D. M. Reid-Henry, R. C. J. Sawyer, D. Seth-Smith, E. N. T. Vane, H. Waller, C. H. Wastell, C. S. Webb, H. Wilmot, J. J. Yealland, O. H. Young.

Guest of the Club : Field-Marshal the Viscount Alanbrooke.

Guests : Dr. K. Aylwin-Gibson, J. Bailey, D. P. Bell, Mrs. W. D. Bell, Dr. F. Bernis, Senora C. Bernis, S. A. Croucher, Mrs. S. A. Croucher, W. J. C. Frost, Miss H. Gentry, W. E. Higham, H. Ingram, Mrs. F. B. Lake, J. Markham, Mrs. R. Maurice, Mrs. S. Murray, Mrs. J. A. Norris, R. S. Schwartz, Mrs. D. Seth-Smith, Mrs. H. Waller, Mrs. C. H. Wastell, Miss H. Wastell, W. A. Wood, Miss A. H. Young, Mrs. O. H. Young.

Members of the Club, 33 ; guests, 26 ; total, 59.

Walter Higham showed his recently completed coloured film, "Birds of the Scottish Highlands." In this, typical Scottish birds such as the Dotterel, Ptarmigan, Greenshank, Capercaillie, Crested Tit, Red-throated and Black-throated Diver, and Slavonian Grebe, are shown. The Buzzard, Corncrake, Greyhen, Common Gull, Sandpiper, and other birds are dealt with ; and a visit is made to a colony of nesting Black-headed Gulls.



The most important part of the film, however, deals with the Golden Eagle. For many years Walter Higham visited the Highlands in search of eyries suitable for filming. At last, after fourteen years, he succeeded in finding two of very different types. One was built in a tree near the head of a glen, the other amidst rocks, high up on a mountain side. The result of this perseverance is a fine series of photographs of family life.

In thanking Walter Higham for showing his absorbingly interesting film the Chairman said the technical quality was well in keeping with the very high standard associated with this famous photographer. The audience showed by its sustained applause that it was in full agreement with this tribute.

The next meeting of the Club is on **10th November, 1954.**

ARTHUR A. PRESTWICH,  
*Hon. Secretary.*

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## NEWS AND VIEWS

Last year Arthur Lamb bred a Blue-fronted Amazon  $\times$  Yellow-cheeked Parrot hybrid which has flourished. This year the parents have successfully reared two young ones.

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Sidney Porter's Malachite Sunbirds, mentioned in the last number of the Magazine, unfortunately did not succeed in hatching their eggs. One egg contained a young one dead in shell and the other was punctured.

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Post-mortem examination revealed that "Louisa", the Louisiana Pelican that recently died in St. James's Park, should have been named "Louis". Since 1951, of thirteen Pelicans to arrive, eight have died, two are in St. James's Park, and three at the Zoo.

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G. C. Lynch has bred two Purple Finch  $\times$  Greenfinch hybrids. It is perhaps a little remarkable that there is no record of the Purple Finch being bred in this country. There are hybrid records, and not good ones at that, of Purple Finch  $\times$  Canary and Scarlet Rosefinch  $\times$  Purple Finch.

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During the past few months several members have had cause to be grateful to the Society for the Waterfowl Ringing Scheme. The high



winds of recent months have enabled many birds with wings improperly clipped to become airborne. Use of the blue rings has been instrumental in the Police and R.S.P.C.A. returning some of these birds to their owners.

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Green-winged King Parrakeet—one young one has left the nest at the London Zoo. Jendaya Conure—Mrs. A. Morgan has a young one flying. Black-headed Conure—C. M. Payne's three young ones eventually left the nest. Canary-winged Parrakeet—E. N. T. Vane had a nest of four reared. Golden-mantled Rosella—L. G. Middleton, a nest of six reared; Allen Silver, a nest of four, and a second doing well. Quaker Parrakeet—London Zoo, five flying.

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Dr. Roger Tory Peterson (*National Geographic Magazine*, August, 1954) gives a very interesting account of the unassisted arrival and settlement of the Cattle Egret (*Bubulcus ibis*) in America. This Egret is a familiar sight in southern Spain, in Africa, and in the warmer parts of Asia. Some twenty years ago it appeared suddenly in South America. Just how it made the transatlantic flight and when is not known. The birds flourished and within twenty years the flocks have increased and spread, with the result that the species has now been seen in Florida, where as many as 152 have been counted, Virginia, Maryland, and other Atlantic Coast States; also in Newfoundland. This is a bird migration unprecedented in history.

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The AVICULTURAL MAGAZINE has now reached the venerable age of three score years. While rejoicing in this fact, we must not overlook a milestone in the existence of a journal with somewhat similar objects, namely *Foreign Birds*, formerly the News Bulletin of the Foreign Bird Exhibitors' League, now the magazine of the Foreign Bird League. The League was founded in March, 1933, and has thus "come of age". The prime mover in its foundation, Harold King, is still the guiding genius, being both Hon. Secretary and Editor, and it is due mainly to his efforts that it is in such a strong position. It is worthy of record that the President, Chairman, the majority of the principal officers, together with some three hundred members, are also members of the Avicultural Society.

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The Bailiff of Royal Parks reports the hatching of a Pink-footed Goose, on the Long Water, Kensington Gardens, on 18th July, 1954.



Credit for this breeding is due to our member, W. H. Punter. This is a somewhat uncommon event and the records are few. The Pink-footed bred for many years with Major P. Hammond, D.S.O., of Blakeney, Norfolk. Two of the young ones were given to W. H. St. Quintin, and from these young were bred at Scampston Hall, in 1924 and 1925. The Kensington Gardens' birds originally came from Peter Scott in 1947. In answer to our inquiry, Peter Scott said they have not yet succeeded in breeding the Pink-footed at Slimbridge. He also drew attention to the fact that Dr. John Berry has bred them annually for some years : so has a Mr. Williams, in Norfolk.

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The response to the request to members in arrears to bring their subscriptions up to date has been very good, but some members are apparently inclined to procrastinate. Please assist the Hon. Treasurer and the Society generally by keeping up to date.

A. A. P.

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## REVIEWS

LA PERRUCHE ONDULÉE ET LES INSÉPARABLES (Budgerigars and Lovebirds). By M. LEGENDRE, with illustrations by L. DELAPCHIER. Editions N. Boubée & Cie. Paris, 1954. Price 500 francs.

In the preface to his book *Oiseaux de Cage*, which was reviewed in the May-June number, 1953, of the AVICULTURAL MAGAZINE, Monsieur Legendre stated that he hoped to deal with the Parrots and Doves, which were not included in that book, in later volumes. The book under review follows the same lines as its forerunner, and the first and larger half is devoted to Budgerigars. The opening chapter is an account of the original Budgerigar in Australia, and this is followed by chapters on the first importations, acclimatization in Europe, colour varieties, aviaries, bird-rooms and cages, feeding, breeding, naming, and illnesses.

The second part of the book, which deals with Lovebirds, opens with a description of the various species, after which there is a chapter containing general information. It is stated that the information given concerning the keeping of Budgerigars also applies very largely to Lovebirds, so the various points are not dealt with so fully as in the first section of the book. Details regarding the special needs of Lovebirds are given, and it is pointed out that some species are more sensitive to cold than Budgerigars, and attention is drawn to their



quarrelsomeness with other birds and even with other pairs of the same species. Full descriptions of nine species are then given, with details of their native haunts, first importations, requirements in captivity, and breeding. The final chapter is on hybrids.

The book is well illustrated with good photographs and two colour plates, one showing four varieties of Budgerigars and the other five species of Lovebirds. In addition, there are a number of line drawings, and diagrams showing the layout of aviaries. The book is dedicated to Monsieur Jean Delacour.

P. B-S.

#### EIN VOGELFREUND ZWISCHEN ZEITEN UND WELTEN

(The experiences of a bird-lover between two ages and in two worlds). By WILHELM KRACHT. Verlag Gottfried Helene, Pfungstadt-Darmstadt. Price 5.90 DM.

As Dr. J. Steinbacher says in his Introduction, this book is the story of the varied life of a man who is both an expert at bird keeping and a great bird-lover.

In the first chapter Wilhelm Kracht describes his early efforts at keeping and rearing birds in a small village in Westfahlen where no one had any knowledge of this art, and relates that the first bird he kept was a Blackbird. He gives a vivid description of the countryside and the life at that time—the last part of the nineteenth century—and concludes the chapter by giving a list of the different species of birds he kept. The author then describes his experiences in Paris where he had a post, and his first visit to the Paris bird market. His journeys then took him to Madrid where he again paints a word picture of the life and country, with particular attention to the birds he kept there. This is followed by an account of the time he spent in Berlin, his friendship with the Heinroths, and the many species of birds he kept in captivity. In 1913 he went to Odessa, where he states he reached the peak of bird keeping; he remained in Russia for six years and returned to Germany in 1918, where he lived in various towns, always keeping birds or maintaining his interest in some way, and finally settled in Freiburg. Wilhelm Kracht has lived during a period of great change and visited widely differing countries, and he writes vividly of his impressions, the life of the countries he has lived in, the interesting people he has met, and the many different species of birds he has kept, varying from small passerine birds to various species of Eagles. His book contains much interesting information gained from his own practical experiences.

P. B-S.

\* \* \*



## NOTES

## THE EFFECT OF CLIMATIC CONDITIONS ON BREEDING RESULTS

It has long been the custom to associate inclement weather occurring in Spring and early Summer with low fertility in foreign birds' eggs—probably rightly, but is it as simple as that?

Naturally warmth and sunlight will have a more cheering effect on tropical and sub-tropical birds than will dull cool weather, but what is the extent of the physiological effect?

Bad weather seems a likely cause of a falling off of interest in nesting after early promise that so often happens, but in these cases no eggs are laid. The causes of infertility in birds' eggs must be many: there may be a lower concentration of sperms in cold weather, or, though fertilization might be adequate, activation of the germ does not take place or ceases at an early stage.

Spermatogenesis in domestic poultry is thought to be partly related to the length of daylight and by early April there are more than twelve hours of daylight.

Climatic conditions appear not to have any effect on the nesting of some birds. Black-footed Penguins breed in winter here; Cereopsis Geese usually nest in January; Hooded and Brown's Parrakeets in October, and Indian Ringnecks in March, so in these cases, at least, there seems to be some cyclical influence.

Then there are so often the exceptions. This year, for instance, Mikado Pheasants and Cape Teal have bred exceptionally well at Leckford and Turquoise Parrakeets, the most delicate of the Grass Parrakeets, have bred well at Keston.

Controlled experiments would be very difficult and expensive, but it would be interesting to see whether another ten degrees of warmth and some artificial sunlight supplied where practicable during the Spring made any appreciable difference.

J. J. YEALLAND.

\* \* \*

## CORRESPONDENCE

## ARTICLES ON THE COMMONER BIRDS

When I first came in contact with the AVICULTURAL MAGAZINE, I read that it was a magazine for British and Foreign Birds. So far, I have only read of the higher priced foreign birds (with the exception of once, when Mr. Boosey gave an article on Zebra Finches). Would it not be possible to have more notes on the more common birds; we are not all millionaires, and while the more exotic birds make interesting reading for the richer people, they do not interest the common everyday working class. I would like to read more about the British birds and cheaper foreign finches, etc. There is very little in the Magazine to interest me at the present time, and I believe it would be of more interest to a lot of subscribers if articles such as I have just mentioned were more frequent. No offence now please; I'm just writing what I think.

GEO. FLAXMAN.

618 LAYARD ST.,  
LONDON, ONT.  
CANADA.

I entirely agree with the sentiments expressed in this letter, and am only too anxious to receive articles on the more common birds. It is quite a mistaken idea that because a bird is commonly kept in captivity there is nothing more of interest to write about it. When Mr. Delacour came to write his monumental work on Pheasants, he found a great lack of information regarding the Golden Pheasant, one of the most popular species kept in captivity. And with regard to ornithology in general, it is significant that though there have been monographs written on many of the rarer species, knowledge regarding the House Sparrow is lamentably small.—EDITOR.



## MAGPIES AND SQUIRRELS AS MENACES TO AVICULTURE

Although they are pests, I had never thought of either the Magpie or the Grey Squirrel as actual avicultural menaces. Both, it is true, will frighten birds by running about on top of their aviary, but so will an innocent stray homing-pigeon that alights upon it.

I now know, however, that the presence of Magpies and Grey Squirrels gives cause for far greater anxiety.

The late Duke of Bedford's breeding pair of Blue Ringnecks hatched every egg and had four young ones in the nest. In the middle of May, however, when they were at the stage when they are only just starting to feather, but are too big to be brooded, the weather became more and more arctic every day, so, on looking in the nest-box, I was hardly surprised to find that the three youngest had died of cold. The fourth was better-clothed and eventually fledged successfully. It had, however, a habit of clinging on to the wire netting, and a few days later was found dead with a chest wound. The Magpies had been taking a great interest in it, and I have little doubt it was they who killed it by jabbing at it through the wire netting. Had it been murdered by its parents they would almost certainly have scalped it.

A pair of Roseate Cockatoos reared a fine brood of three, and not long after they fledged the feeding door was mysteriously found wide open, the birds, fortunately, being still in the aviary.

The button closing the feeding door was somewhat loose, and through a chink, the sunflower and monkey nuts could be seen from outside. A Grey Squirrel had frequently been seen in the vicinity and inspection of the aviary disclosed a mass of scrabbings of its toe-nails on the woodwork, particularly round the feeding door. I think there is little doubt it had discovered that by turning the loose button, it could get inside and feed, particularly as on the day of the discovery of the open door not a scrap of food of any kind was left in the food vessel.

The door is now secured by a small bolt, and there has been no further trouble.

EDWARD BOOSEY.

BRAMBLETYE,  
KESTON, KENT.

Since writing this I have actually seen the squirrel carefully examining the new door fastening so there is no doubt whatever that he was the culprit.

## " MASKED WHITE " ZEBRA FINCH

We thought Chestnut-flanked White Zebra Finch a better name for the new variety, as ordinary Whites usually throw a proportion of young that are ticked or marked with grey. These, at any rate in this country, are quite often referred to as marked White Zebra Finches, and this might well cause confusion between them and the new variety.

EDWARD BOOSEY.

BRAMBLETYE,  
KESTON, KENT.

\* \* \*



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### NEW MEMBERS

The eighteen Candidates for Election in the July–August, 1954, number of the AVICULTURAL MAGAZINE, were duly elected members of the Society.

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- L. G. MIDDLETON, to The Old Vicarage, Church Town, nr. Garstang, Lancs.
- C. R. PODMORE, to 49 Greystones Grange Road, Ecclesall, Sheffield 11.
- G. TH. VAN DAM, to Zoo-Centrum, Aalten, Holland.
- Dr. H. WILDEBOER, to 244 Saltshouse Road, Sutton-on-Hull, nr. Hull, Yorks.

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*The charge for Members' advertisements is ONE PENNY PER WORD. Payment must accompany the advertisement, which must be sent on or before the 15th of the month to A. A. PRESTWICH, 61 CHASE ROAD, OAKWOOD, N. 14. All members of the Society are entitled to use this column, but the Council reserves the right to refuse any advertisements they consider unsuitable.*

### WANTED

Female Speckled Pigeon or South African Rock Pigeon.—DEREK GOODWIN, Toft, Monk's Road, Virginia Water, Surrey.

### FOR SALE

Hand-reared Barrow's Golden-eye, Mandarin, and other species Ducks.—C. T. DALGETY, Radwell Mill, Baldock, Herts.

1954 Golden Pheasants. Exchange offers of other Pheasants (except Silvers) welcome.—B. BELFIELD, Alma House, Dalton, Parbold, nr. Wigan, Lancs.

## AUSTRALIAN PARROTS IN CAPTIVITY

*A series of articles by Alan Lendon published in the Avicultural Magazine. A full account of 60 species of Australian Parrots is included in the book which deals where possible with the author's personal experiences in keeping them in captivity in South Australia.*

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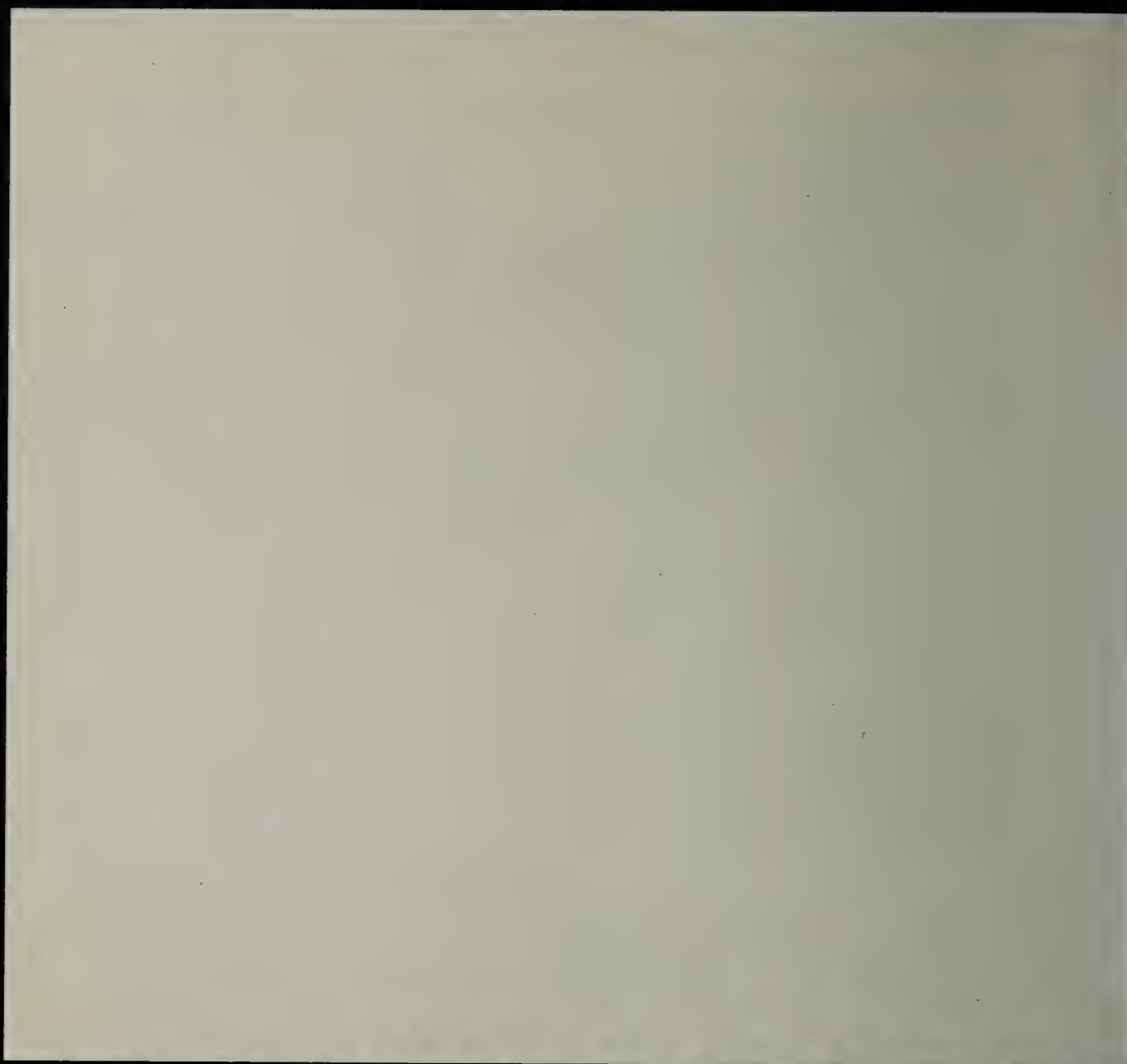


## THE AVICULTURAL SOCIETY

Members are reminded that the annual subscription becomes due on 1st January. They are asked kindly to send without further notice to the Hon. Treasurer, A. A. Prestwich, 61 Chase Road, Oakwood, London, N.14.

Owing to the steeply increased cost of producing the AVICULTURAL MAGAZINE it is very much regretted that the January-February, 1955, number cannot be sent to members until their 1955 subscriptions have been received.







# AVICULTURAL MAGAZINE



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The Magazine is published bi-monthly, and sent free to all members of the Avicultural Society and Avicultural Society of America. Members joining at any time during the year are entitled to the back numbers for the current year on the payment of subscription. All matter for publication in the Magazine should be addressed to :—

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RED-BELLIED CONURE.



# AVICULTURAL MAGAZINE

THE JOURNAL OF THE AVICULTURAL SOCIETY  
AND THE AVICULTURAL SOCIETY OF AMERICA

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NOVEMBER-DECEMBER, 1954

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## RED-BELLIED CONURE

(*Pyrrhura frontalis frontalis*)

By A. A. PRESTWICH (Southgate, England)

François Levaillant (1801) depicted a parrakeet he considered a new species under the name *La Perruche Ara à bandeau rouge*. Shaw (1811) gave it the scientific name *Psittacus vittatus* and vernacular Banded Parrakeet; and Latham (1822) similarly called it the Banded Parrot.

Vieillot (1817) bestowed its present specific name when he described it as *La Perruche à bandeau rouge, Psittacus frontalis*. (By rules of priority, *Psittacus vittatus* Shaw (1811) is antedated by *P. vittatus* Bodd. (1783).)

Peters (1937) gives the distribution as "Southeastern Brazil from eastern Minas Geraës and Espirito Santo to Rio de Janeiro".

As usual, very little has been written about this Conure in the wild state. One of very few writers, J. F. Hamilton (1871), describing a small collection of birds made in the south of Brazil in the spring of 1869, says: "Very common. I met them frequently in the neighbourhood of maize-plantations, on which they commit great havoc. Along the São-Paulo railroad flocks were frequently seen flying overhead." Not very enlightening! But then field-collectors rarely are.

Possibly the first of this species to arrive in this country were the two purchased for the London Zoological Gardens in May, 1869; five were purchased in June, 1883, since when there have, of course, been others in the Collection.

D. Seth-Smith (1926) says: "I am informed that some of these Conures were offered for sale in London in 1898; and three specimens, two males and one female, were obtained by the writer on August 24th, 1903."

During the past fifty years just a few have been imported from time to time, wars and parrot ban permitting, and in 1924 a pair owned by W. Shore-Baily successfully reared a nest of four young ones, for which event the Society's Medal was awarded.

In July, 1952, several pairs reached England, and three pairs were



obtained for the "Darenth-Hulme" collection. One pair successfully reared three young ones last year, and the flock at present numbers seven, one adult and one young one having died during the winter.

This charming Conure has also been bred in France, 1919, Mme Lécallier, and 1920, Jean Delacour : Japan, 1928, Prince Taka-Tsukasa : Australia, 1952, Sir Edward Hallstrom : and Denmark, 1953, J. Dalborg-Johansen.

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## A REMEDY FOR AIRPLANE WING

By CONSTANCE NICE (Chicago, Ill., U.S.A.)

In the summer of 1954, at the Delta Waterfowl Research Station, Delta, Manitoba, where my mother and I have spent several seasons raising young marsh birds from the egg to study their behaviour and development, I was asked by Dr. Martin Moynihan to look at one of his young Franklin's Gulls, because its right primary joint had started to turn out.

On examining both wings I discovered that the primary pin feathers were just starting to develop, and that the affected bone was noticeably more flexible than the normal one.

I told him what I had been told by Peter Ward, the head of the duck hatchery, and by two zoo men, that the underlying cause of the weakened condition of the developing bones was some unknown deficiency in the diet. I thought, however, that the immediate cause of the twisting of the joint was the weight of the developing primaries, and suggested that if the joint were taped into the correct position it might grow normally.

(The year before, when the wings of one of our hand-raised Franklin's Gulls were constantly slipping down, I had put them in the wing pockets several times, telling the young bird kindly but firmly to keep them there. The next day and from then on the gull carried her wings properly. I had been equally successful this summer with the only hatchery raised Blue gosling, although it was not particularly



tame. I think that these young birds, without close association with adults of their species, had never happened to discover the proper and comfortable adult method of holding their wings, but almost immediately adopted it when shown.)

Dr. Moynihan taped the joint into position with ordinary Scotch tape, just before putting all the young gulls to bed in the dark. Starting the next day, the joint was held in the correct position. He found this method completely successful on his two or three gulls whose primary joints had turned out.

It did not matter whether they were taped as soon as he noticed the condition or two or three days later, or whether the bird was able to remove the tape very quickly, or whether it stayed on for several hours. Sometimes he had to apply the tape for two or three nights over a period of several days before the bird held its wings normally.

In the case of our hand-raised Sora Rail, whose primaries were already at least half an inch long, I taped both her wings off and on over a period of a week. However, it was not till the last time that I observed her brothers and sisters carefully and tucked her growing primaries as far under her secondaries as they were holding theirs. The next day and thenceforward the Sora held her wings correctly.

Also on Peter Ward's advice, Dr. Moynihan immediately bought a vitamin-mineral supplement, Polynutrin, and sprinkled it on the birds' food. None of the younger birds showed any indication of developing airplane wings.

We never taped the wing to the body, but just the primary in the proper position under the secondaries, and always removed the Scotch tape some time the next day, holding on to the feathers under the tape to try to keep from pulling them out or tweaking them. The birds often lost a few small feathers, but this did not spoil their appearance.

Whether taping the wings of a bird whose primaries had developed further would bend the joint into its proper position, and whether the bird would then hold it so, I have no idea.

In September, 1954, Dr. Konrad Lorenz told me that he treated airplane wing by making a roll of Scotch tape with the sticky side out, and putting the upper side under the secondaries and sticking the sheathes of the developing primary pinfeathers on to the lower side of the roll, so the primaries were held in the correct position. The tape was left in place until it dropped off with the feather sheathes.

This method should be less annoying to the birds than having the tape wrapped around the outside of their wings, and it certainly would be less trouble to have to tape the wing only once.



## NOTES ON FERAL PIGEONS

By DEREK GOODWIN (Virginia Water, Surrey, England)

The Pigeon (*Columba livia*) is among the commonest of birds in British towns, as well as elsewhere throughout most of the temperate and tropical regions of the world. Ornithologists have, however, tended to ignore this species wherever its populations were derived from or interbred with domestic stock. Finn (1921) in his book on London's birds, included it under the name "Common Pigeon", a very apt one, as this bird is *the* Pigeon of the layman. Unfortunately, Fitter (1945) used the name "London Pigeon" and later he and Richardson (1952) misleadingly applied it to all feral pigeons, irrespective of locality or origin. Naumann (1833) gave a most interesting and detailed account of the status and habits of feral, dovecote, and domestic pigeons in Germany, and Darwin (1859 and 1868) dealt with the appearance and distribution of dovecote and domestic pigeons throughout the world. The present paper deals chiefly with observations on feral birds, but some notes on wild birds are included, and most of the behaviour patterns described are, of course, common to all members of the species.

The following terms will be used to designate different categories of *Columba livia* :—

*Rock-Pigeons*—wild populations of *C. livia*.

*Dovecote Pigeons*—pigeons nesting or roosting in dovecotes, pigeon-towers, barns, etc., exploited by their "owners" for food (young pigeons) or dung, but not selectively bred or confined in any way, and not usually fed by their owners.

*Feral Pigeons*—pigeons living in a free and ownerless state, but which have originated from Dovecote or Domestic Pigeons.

*Domestic Pigeons*.—Pigeons kept under a greater degree of control subject to selective breeding by man and fed by him.

*Homing Pigeons*.—Any domestic pigeons kept and bred for their ability to return home when released at a distance. Such birds are usually subjected to rigid control and selection by man, and regularly fed. The breed now used for this purpose in Britain (and elsewhere) is known as the Racing Pigeon or Racing Homer. The Carrier Pigeon is a purely fancy breed, and has been so for at least two centuries.

*Flying Pigeons*.—Any domestic pigeons kept for the entertainment they afford their owners by their flying when liberated. This may consist of height and duration of flight (tipplers, cumulets), or aberrant forms of flight (tumblers, rollers, sharpshooters). Many fancy breeds have been derived from Flying Pigeons, and still bear the same names. (For example : Long-faced and Short-faced Tumblers,



Exhibition Flying Homers, and Show Homers.) These breeds are subject to control and selection, and are usually kept closely confined except when liberated to perform.

*Fancy Pigeons*.—Domestic Pigeons of any of the numerous breeds and sub-breeds that are kept and bred solely for their appearance and to conform with some artificial "standard of excellence". Many of these birds are monstrosities, incapable of feeding their own young owing to their abnormal skull and bill structure.

*Pigeon*.—The species *C. livia*, where the remarks made apply equally to wild, feral, or non-monstrous domestic birds.

### *The Origin of Feral Pigeons.*

That all Domestic and Dovecote Pigeons owe their origin to the Rock Pigeon (*Columba livia*) and to no other species is fully established (Darwin, 1868). I have met many ornithologists and pigeon-fanciers who doubted this fact, but none has any valid evidence to the contrary. Fertile hybrids have been produced between *C. livia* and some other species of *Columba* (notably and rather surprisingly, the Woodpigeon (*C. palumbus*) among them), but the domestic breeds show no trace of such hybrid ancestry. Where they differ most from the Rock-Pigeon they differ equally from all other wild species. That the markings or structural developments of some Domestic Pigeons show similarity to those of certain wild species not even con-generic with them is of no significance in this respect (see Darwin, 1868).

The existence of clearly differentiated breeds of Domestic Pigeons dates back at least to Roman times (Darwin, 1868), but the practice of keeping, or rather exploiting, Dovecote Pigeons has, at any rate until recently, been practised on a far larger scale than the breeding of domestic varieties. Such Dovecote Pigeons were (and usually still are) very similar to Rock-Pigeons in type. In England and Western Europe (and doubtless elsewhere) they were mostly either of the natural blue colour or "blue chequers", "dark blue chequers", or "velvets", that is birds showing varying degrees of melanism resulting in the wing-coverts being spotted with black on a grey ground, predominantly black with some blue-grey spotting or completely black. There is some likelihood that "chequered" birds may occur among wild Rock-Pigeons (Darwin, 1868, Petersen à Botni and Williamson, 1949), but no proof, as such birds have always been observed in areas where it is possible that feral or domestic birds could, at some time, have interbred with the wild ones. Conversely, of course, it is only in such places that the occurrence of aberrant specimens is likely to be noticed.

The Feral Pigeons of most parts of the old world appear to have been derived originally from Dovecote Pigeons that strayed to find homes for themselves, with a slight admixture of strayed or lost



Domestic Pigeons. Of the latter, only such as approximated to a Wild Pigeon in form and ability would have survived *and successfully reared progeny*. Hence the general similarity of Feral Pigeons to Rock Pigeons rather than to the various Fancy Pigeons is because, for the most part, they are descended from birds equally like the wild stock. There is no need to postulate some hypothetical and semi-mystical "reversion to the wild type". In the past century, and more especially in the last fifty years or so, the widespread popularity of pigeon-racing has had an enormous effect on the feral population of Britain. Homing Pigeons get lost in large numbers during training and racing. Most of them are physically capable of getting their own living and many which appear psychologically incapable of fending for themselves in the fields are able to adapt to the more directly parasitic role of "town pigeon". In Britain (as in many other parts of western Europe), the resultant constant influx of lost Homing Pigeons has coincided with a widespread elimination of Dovecote Pigeons by man, and with continued periodic destruction by him of large sections of the feral population. Because of this the Feral Pigeons in many places are now predominantly of Homing Pigeon type.

As was pointed out by Darwin (1868), Dovecote Pigeons normally show characteristics in common with the Rock Pigeons of the same geographical area, particularly as to the colour (white or grey) of the rump. Hartert (1912-1921) considered Domestic Pigeons to have originated separately in various places from different sub-species of Rock-Pigeon. This is doubtful. It is known that many of our Flying, Homing, and Fancy Pigeons were first brought to Europe from the Middle East or India, and it is likely that such breeds as were "made" in the west were derived from these already domesticated birds rather than from pristine wild stock. Dovecote Pigeons may have been derived independently from local wild stock. On the other hand, their resemblances to the local Rock-Pigeons might be due to interbreeding with them, or to similar environmental influences being at work on the Dovecote Pigeons as on the wild ones.

#### *Sociability and Segregation of Populations.*

In all its activities that are not purely reproductive, the Pigeon is gregarious. It does, however, like most social birds, defend its roosting perch and an area around the nest which varies in size according to circumstances. For a detailed account of sexual and aggressive behaviour see Heinroth (1943). This sociability is not simply a matter of many birds wishing to exploit good feeding, bathing, or resting places at the same time. The lone Pigeon will actively seek a companion to rest near. A good example was given by a female in my possession, which I hand-reared after it had fallen from its nest. When it began to fly about it soon discovered some Barbary Doves



(*Streptopelia risoria*) in one of my aviaries. Previously it had spent most of its spare time in a shed where it roosted, or in an adjacent garage. After finding the doves it did all its day-time resting and preening perched above them on the wire roof of their aviary. If they were not in the open part, but in the shelter, the Pigeon rested on a ledge outside their shelter window, through which it could see them. This Pigeon is blue, its parents were a blue and a blue chequer. It had never in its life seen a Pigeon of similar colour to these doves, yet it evidently recognized them (? by shape and movement) as "the nearest thing". It was not at that period reacting sexually to the doves, but regarded me as its mate, and left them to seek my company whenever I appeared.

That Feral and Domestic Pigeons interbreed in many cases with Rock-Pigeons is familiar to all, since it is mentioned, often emphasized, in most accounts of the species. The far more interesting fact that in many places there is very little interbreeding—relative to the apparent opportunities for it—between Feral, Dovecote, and Rock-Pigeons on one hand and Domestic Pigeons on the other has received little attention, although it was remarked upon (Adams, 1864) briefly nearly a century ago. This is very noticeable in the Nile Delta, where the Dovecote and Feral Pigeons are very similar to the local Rock-Pigeons (*C. livia schimperi*), but the Domestic Pigeons are mostly much larger and white, pied, or red in colour. Such relative segregation may arise, partly through birds tending to pair with those in the same colony (though I know no proof of any such tendency), partly through human interference, but also partly, I think, through the preferences of the birds themselves. It is known that in many species of pigeons and other birds, recognition of their own kind is not innate, but occurs through the young bird identifying itself with the creature which has reared it and/or with which it has been reared. This is probably true for *C. livia*. It is certainly a fact that the young Pigeon will often show a strong preference to pair with another similar in appearance to those which reared it, or among which it spent its early days. Such preference may be most striking in members of the more unusually coloured domestic breeds and is generally thought to be due to their being "instinctively" drawn to their own aberrant kind. It is, however, a result of "imprinting"; such birds only show this trait if they have been reared by, and spent their youth with, pigeons like themselves.

Thus whenever the majority of Domestic Pigeons differ appreciably in appearance from the majority of Feral (or Rock or Dovecote) Pigeons it is likely that barriers to interbreeding arising from differences in ecology will be reinforced by the acquired mating preferences of the birds. In countries, such as Britain, where the keeping and racing of Homing Pigeons is practised on a large scale,



the situation is very different. Here thousands of lost Homing Pigeons are scattered widely throughout the country every spring and summer. The vast majority of those which survive join other Domestic Pigeons or Feral Pigeons in towns, but presumably some join cliff-dwelling Feral or Rock-Pigeons. A lost Homing Pigeon that joined a flock of Rock-Pigeons would perforce have to accept one of these as a mate.

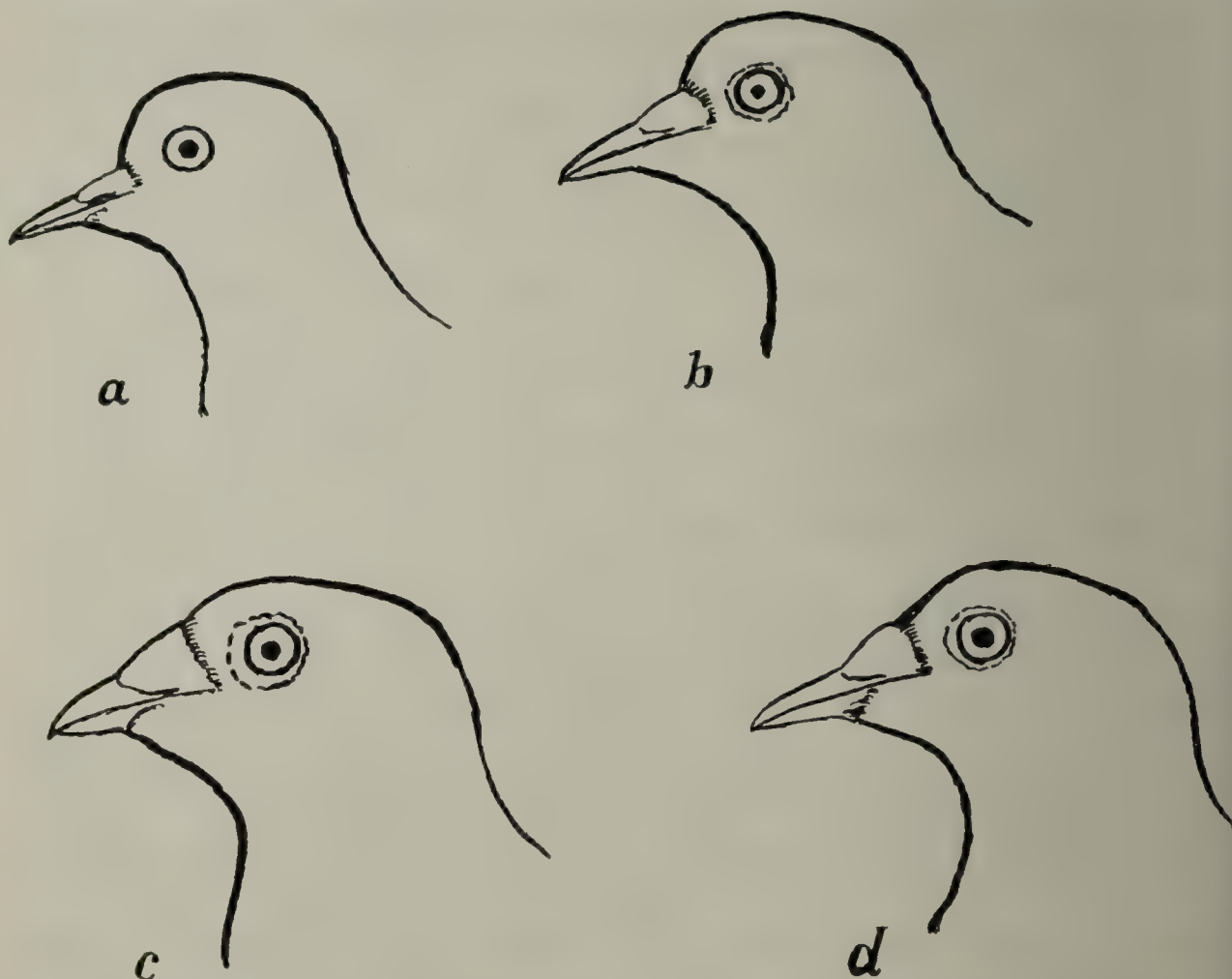


FIG. 1.—Heads of (a) Rock Pigeon (male) ; (b) Typical Feral Pigeon from London (male) ; (c) Typical Homing Pigeon (male) ; (d) Typical Homing Pigeon (female).

Since it would be used to seeing companions of this colour—among others—it would have no aversions to so doing. Apart from colour (which in many is identical with or similar to that of the Rock-Pigeon), a Racing Homer differs from the wild form being larger, having a proportionately heavier bill, larger cere (called “wattle” by pigeon-fanciers) and more bare skin (“cere” of pigeon-fanciers) round the eyes. It is unlikely that these differences would deter a Rock-Pigeon from pairing with a Homing Pigeon, at least if the latter were blue or blue-chequer in colour. Indeed, it is conceivable that if the Rock-Pigeon were the female and the Homing Pigeon the male, their differences in size and head proportions might be mutually attractive rather than otherwise. The difference between them being, in effect, an exaggeration of the normal sexual dimorphism, which is slight in the Rock Pigeon but more pronounced in most strains of Homing Pigeons.



Despite its theoretical probability, however, there seem to be few actual records of mixed pairs of Rock and Feral Pigeons. In a brief trip to the Shetlands last June, I saw apparently pure Rock-Pigeons within a mile of Feral Pigeons that showed no trace of wild intermixture. Mr. W. B. Alexander informs me that he suspects that small groups of Rock-Pigeons still exist in some of the Yorkshire and Welsh cliffs, maintaining their purity in spite of the large Feral Pigeon populations in the same areas. It is quite possible that where Rock-Pigeons have been replaced by Feral Pigeons this has been achieved through their "going under" in competition with the latter rather than extensive interbreeding between them. For example, safe rain-proof nest-sites may often be scarce. Where this is the case a pair that can obtain and hold such a site will, in the course of a very few years, rear many more young to independence than will a dozen other pairs that are forced to "make do" with inferior nesting places.

*Some Local British Populations.*

In some instances these observations are little more than impressions based on brief visits of only a day or two. They are in such cases offered very tentatively rather to stimulate further investigation than for any other reason. The dates and duration for which such populations have been under intermittent observations are given in brackets.

*Inner London (1936-1940 and 1947-1954).*—Here the Pigeons show every intergradation between a small minority almost if not quite identical in type with the wild form and a much larger minority which, although unringed, are to all appearances pure Homing Pigeons. The majority are about mid-way between these two extremes, but inclining to Homing Pigeon rather than otherwise. On the whole the smaller Dovecote Pigeon types are more numerous in the most central districts, suggesting that the influx or establishment of lost Homing Pigeons has been greatest in the peripheral areas. I have never seen a ringed bird ("first generation homer") among the small parties, pairs or singletons that one finds busily *searching* for food in back streets, railway stations, etc., and hardly ever failed to spot one or more in any flock waiting to be fed in a park or square.

I have dealt elsewhere (Goodwin, 1952) with the colour-varieties of London's pigeons, but must emphasize here that there is no correlation between colour and type. Homing Pigeons, or for that matter Fantails, may be identical in colour with wild birds.

*Windsor.*—Most, if not all are of Homing Pigeon type, some individuals are, however, rather neater and smaller than most Homing Pigeons, and may represent Dovecote Pigeon origin.

*Scarborough (April, 1940-June, 1940, and November, 1945).*—In 1940 there were about a dozen birds of Homing Pigeon type living in the castle ruin on top of the cliff. When I returned in 1945 the colony



had increased to at least two hundred, probably many more. These birds fed inland during the day and returned during the afternoon and evening to roost on the cliff ledges. Most of the roosting places offered little shelter and I saw no pigeons entering any of the holes or crevices, all of which seemed to be owned and defended by Jackdaws. All the pigeons seen at close quarters were Homing Pigeons or their immediate descendants.

*Bristol (September, 1953, and May, 1953, two days only).*—Here, as in London, I got the impression of stocks derived from a Dovecote Pigeon nucleus, now in process of being swamped out by Homing Pigeons. A small colony near the station were largely of Dovecote Pigeon type, had they been a little smaller one or two of the blues could have passed for Rock Pigeons. Most other birds seen were, however, close or identical to Homing Pigeons, and ringed birds were plentiful.

*Lerwick (June, 1954, two days).*—The many Pigeons I saw in the streets and about the dock were of Homing Pigeon type. About half were racers bearing rings. Most of these appeared to be having a hard time, and their tails had been pulled out. About a dozen pairs of Pigeons were nesting in some boxes fixed to an old barge not far from the harbour. These were of mixed Dovecote Pigeon and Homing Pigeon type. None of the birds showed any signs of inter-breeding with wild stock, and there were no aberrant birds among the Rock Pigeons I saw on Noss and Bressay near by. I did, however, see a blue Pigeon and a black pied flying together below the cliffs a short distance from Lerwick, but was not close enough to see whether the former was a Rock Pigeon or a blue Homing Pigeon. Lerwick is a major liberation point for pigeon-fanciers who fly "the north road", so that there is likely to be a constant addition of Homing Pigeons to the local population.

#### *Predators and Competitors.*

There can be little doubt that the most important non-human predators of adult Rock-Pigeons are falcons, particularly or perhaps mainly the Peregrine (*Falco peregrinus*). I have never seen Rock or Feral Pigeons attacked by falcons, but I have seen a good many pursuits of Homing Pigeons by the Lanner (*Falco biarmicus*) in Egypt. The Lanners are hardly so swift or strong as Peregrines, and I think they were usually attracted because the circling of our "nomad" Pigeons, about a basket in the desert, suggested an exhausted or injured bird to them. When pursued the Pigeon would usually fly low and swift, jinking slightly sideways or downwards at the moment that the Falcon struck or attempted to seize it. The Lanner invariably missed at its initial stoop, and then would sometimes rise for another attempt, but more often would chase the Pigeon in swift, low flight. Often the Lanner on overtaking the Pigeon would appear to fly right



over it. This, I think, was due to the Pigeon swerving downwards at the critical moment. The Lanners seemed unable or unwilling to keep hold of the Pigeon, as often the latter would be knocked to earth two or three times, yet finally escape. The chase commonly ended with the Pigeon managing to return and dive under the army truck or between our feet. When chased by a falcon, Homing Pigeons—which are usually very hesitant about entering any strange enclosed place—will dive headlong into any hole or shelter that offers. A few would dodge the stoops and circle upwards, trying to gain height. I imagine these tactics would prove fatal with a Peregrine, and they perhaps represent an abnormal response by domesticated birds. It is, however, amazing how stereotyped and perfect the escaping tactics usually are. I remember well my astonishment on seeing a young Homing Pigeon that had only been on the wing a few weeks and had never seen a falcon before, fleeing and dodging in typical manner as though it had practised escaping from falcons every day of its life.

These escaping movements are also used by the Pigeon when pursued by Sparrows. Both the House and Spanish Sparrows (*Passer domesticus* and *P. hispaniolensis*) have a habit of chasing pigeons and other large birds. The sparrow flies surprisingly fast close at the Pigeon's side, as if trying to peck it under the wing. The Pigeon behaves similarly to when chased by a falcon except that it does not go into shelter, thereby indicating that it is not so frightened as it appears to be. Cats, owls, Snapping Turtles, and various other creatures have been recorded as taking Rock or Feral Pigeons, but I have little or no personal experience of these predators in relation to them.

In towns, such as London, where they rely largely on bread given by the public, Feral Pigeons suffer much from the competition of other birds. They cannot carry off bread as a passerine or gull will do, nor can they swallow large lumps like a gull or duck, or easily peck them to pieces like a crow. The annual influx of wintering Black-headed Gulls greatly reduces the amount of food available to London's pigeons.

To what extent Feral Pigeons living in the country—and Rock-Pigeons—suffer from food competition from other species is unknown. One would think that both the Rook (*Corvus frugilegus*) and the Jackdaw (*Corvus monedula*) might exercise a considerable influence, as these species also feed largely on grain. The Wood Pigeon (*Columba palumbus*) is probably not a serious competitor since although fond of grain and weed-seeds when these are available in quantity, at other times it relies largely on acorns, nuts, berries, and greenstuff. The Stock-Dove (*Columba oenas*), however, appears to feed not only on the same fields, but actually on the same foodstuffs as country-living Feral Pigeons do. Much detailed and careful work will have to be done before it can be ascertained if, and to what extent, the two



species compete, but it seems at least possible that the remarkable increase of the Stock-Dove in Britain and western Europe during the past hundred years is not unconnected with the contemporary decrease in the numbers of Rock and Dovecote Pigeons. It would be interesting to know if there is any region where Rock-Pigeons and Stock-Doves are both plentiful, and if so whether they there share the same feeding grounds and compete for the same foods.

*Relationship with Man.*

Most Feral Pigeons are dependent on man-made buildings for their nesting and roosting sites. Man's reaction to their presence ranges from welcoming them as guests or even as sacred birds, as in many Buddhist and Muslem communities, to active dislike and attempts to destroy them in many western countries. In Britain and America the slight disfigurement of buildings by the birds nests and droppings is considered to justify their destruction.\* Such destruction is usually of a sporadic or haphazard nature, undertaken by officialdom against the wishes of the majority of people. In London, at any rate, it has no permanent effect, the periodic mass destruction merely encouraging a higher breeding success in the survivors. As with man, so with the Pigeon, it usually happens that the fewer the number of individuals in any given area, the higher the standard of living which each enjoys. In country districts Feral Pigeons (and Domestic ones too !) may be shot for sport or to protect crops. They are, however, often spared by sportsmen who do not wish to risk shooting domestic birds. Most unfortunately Rock-Pigeons breeding in natural sites do not share this relative immunity. Many British pigeon-fanciers have a great dislike of Feral Pigeons, particularly if they approach Rock-Pigeons in appearance. Such men kill every ownerless Pigeon that comes into their lofts, and often deliberately decoy them down for this purpose.

Man destroys many of the Pigeon's natural enemies in his own interests, real or supposed. It seems likely, however, that even if he gave such enemies a free hand, the Feral Pigeons would show only slight diminution of numbers, and this would consist for the most part of inexperienced juveniles and birds suffering from disease, malnutrition, or injury. These latter often drag out a miserable existence for months or even years in districts—such as inner London—where predators are rare.

Much of the food of "town" Pigeons is deliberately given to them by man. Thus the subjective feelings of pity, friendliness, or compassion which they evoke in man (or woman) is of the utmost biological importance to them. The relative slowness of peristalsis in this species,

\* Since I wrote the above, I have seen an American journal that concerns itself largely with bird-protection of a sentimental nature, carrying advertisements for a contrivance designed to cripple any Pigeon or other "unwanted" bird alighting on it !



and the resultant posturings as the hungry bird with gullet over-full (but crop and stomach probably empty) endeavours to avoid having to throw up some of the swallowed food (see sketch) often makes the superficial observer consider them as extremely "greedy". As a result of this, and perhaps also of official anti-pigeon propaganda,



FIG. 2.—Hungry Pigeon with gullet crammed but crop empty.

some of the people who feed the birds in London's parks make every endeavour to prevent the Pigeons obtaining any of their bounty. Even in country districts, Feral Pigeons are largely dependent, albeit indirectly, on man, since most of their feeding grounds are produced by his activities. The same is true to some extent of Rock-Pigeons. A study of the feeding ecology of Rock-Pigeons in areas where they do not use man-made feeding grounds would be of utmost interest.

#### *Feeding Ecology.*

From this aspect Feral Pigeons can be roughly grouped into two main classes; those feeding in the countryside and those feeding inside towns. In their feeding habits the first group do not differ from such Dovecote Pigeons or Rock-Pigeons as may be getting their living in the same area. Feral Pigeons dwelling in cliffs, ruined buildings (in the country), old barns, quarries, and similar places get their food outside the towns, but the converse is not always true. In some towns all or part of the Pigeon population may fly out into the surrounding country to feed, returning to roost and nest on the buildings. The same individuals may—though not very commonly—feed both inside the town's streets and in the surrounding fields.

Food is sought on the ground. Pigeons normally alight to look for food only where the earth is either bare or covered only with short or scanty vegetation. Cultivated land, particularly arable fields and stubbles, is usually chosen where available. Fields of hay and corn are visited as soon as they have been cut, but the birds do not often settle among standing corn, as does the Wood-Pigeon (*Columba palumbus*). They may come into stackyards and about farm buildings, particularly if Domestic Pigeons are kept there. They may even under certain circumstances (Naumann, 1833) feed in woodlands on the fallen seeds of conifers and other trees. Exceptionally they may feed



in trees on growing buds or berries. This I have only seen in Kensington Gardens, but it has also (Szemere, 1948) been recorded in Hungary. This is probably an acquired habit which perhaps originated by a bird which had perched in a tree to rest, observing a Wood-Pigeon or some other bird feeding.

Besides seeds of many kinds, some of the more quiescent forms of animal life are also taken, particularly small snails. Cultivated grain (especially wheat) and pulse and the seeds of vetches are favourite foods. In Kensington Gardens they habitually search for and eat such acorns as are, or can be, broken up. Naumann (1833) observed Pigeons swallowing whole acorns. This I have never seen, and all my efforts to get the Kensington Garden birds to do so have been in vain. That they are perfectly capable, physically, of swallowing and digesting small whole acorns I have proved by feeding them to a young one that I was hand-rearing, whilst it was still at the stage when it would blindly swallow anything I put into its mouth. For a comprehensive list of foods taken by Feral and Dovecote Pigeons in Germany and by Rock-Pigeons in Scotland, the reader is referred to Naumann (1833) and Macgillivray (1837).

Feral Pigeons living in towns often, and in England usually, feed inside the town itself. Some natural food is obtained from exposed earth or grass plots in parks and gardens, but the greater part consists, as a rule, of bread or other artificial food which is given to them by the public, or obtained by scavenging. Large numbers congregate in parks and squares where they are regularly fed. Others seek food in the roads, railway stations, dockyards, and so forth. Grain spilled from horses' nose-bags once constituted an important food source, but owing to the decline in horse-traffic it is now a negligible one in most places. Bread is usually the staple food, since being cheaper it is given in greater quantity than any other, but grain, pulse, peanuts, or cheese are always taken in preference except by individuals that have not learnt that these substances are edible. Cooked meat, fat, bacon rind, apple, potato, chocolate, and other sweetmeats are also eaten, at least by some individuals. The need for lime, especially by breeding birds, prompts them to eat the mortar from buildings. This they can only do where it is already sufficiently loose and crumbled for their weak bills to detach pieces of suitable size. The popular idea, largely spread by professional pigeon-killers with an axe to grind, that they are capable of harming sound buildings in this way is, of course, ludicrous.

#### *Feeding Behaviour and Recognition of Food.*

It would be of great interest to know to what extent (1) likely feeding grounds, and (2) food, are recognized innately. Normally the young Pigeon follows older birds to the feeding areas. Similarly adult birds



are often attracted to new feeding grounds by seeing other pigeons flying to or alighting on them. In any flock there are usually experienced birds who will probably "recollect" previous experience at sight of a new-cut stubble, new-sown cornfield, or other man-made feeding ground. A pigeon usually remembers any place where it has found food and returns to it again next time it is hungry. It seems that, in the absence of the greater stimulus of experienced birds going elsewhere, Pigeons instinctively alight on relatively bare ground and away from the immediate vicinity of trees when seeking food. It seems certain that they have an innate tendency to go to the ground when hungry, for hand-reared young ones *that have never been fed at ground level* will do so if left without food. Probably nobody would have thought of putting food for pigeons in the many barren town squares where they are fed, had not hungry birds first alighted in them to search for food.

Pigeons feeding in open country commonly set off for their feeding grounds in flocks, although they may do so singly or in the company of only one or two others. They usually fly fairly low, and on arriving at the feeding ground alight either at once or after some preliminary circling. This latter hesitation is due to the birds being somewhat afraid to alight or undecided exactly where to do so. It is not a deliberate attempt to make sure that no enemy is concealed near by.

Such hesitation is seldom shown if the birds are very familiar with the feeding place, or if there are other Pigeons already feeding there. Once on the ground the birds walk about rapidly with heads down, peering closely as they go, and stopping or turning aside to pick up anything edible they see. In loose friable earth, leaf-mould, chaff, etc., pigeons (all species of *Columba* and *Streptopelia* whose feeding behaviour is known as well as the present species) will search for buried seeds by turning over the substrate with their bills. The bird uses a quick sideways flicking movement of the head, whereby some of the loose earth is thrown to one side. Although less like the normal movement of picking up food, and hence one might suppose more specialized, this movement does not seem any more efficient than the "pecking with closed bill" of gallinaceous birds. Pigeons do not often dig in this manner except where they have already found some grains or have been accustomed to find them.

Homing Pigeons and Flying Pigeons that are allowed their liberty frequently go into the fields to feed in spite of regular and plentiful supplies of food. This habit most often starts when they are feeding young. They are generally believed—probably correctly—to do so in search of snails and other animal food. If this is so, it suggests an innate urge to seek such foods—which are not normally sought after—even though the diet supplied is sufficient to rear apparently perfect young. Any reader who keeps Homing Pigeons which have not



hitherto "gone fielding" could make valuable observations by noting full details about its first occurrence, where the birds first alight, and what appeared to induce them to do so.

Pigeons feed by preference mostly on seeds, which are swallowed whole. There would seem to be no possibility of a sense of taste in any way similar to our own, giving the bird clues as to the edibility of new objects. Adult pigeons make no attempt to "show" food to their offspring at any stage. The method of parental feeding does not enable the young one to see the food it swallows, and under normal conditions the young pigeon does not appear actively to seek food until the parents have ceased to feed it.

A young Pigeon will, if hungry, and if no creature from whom it is accustomed to be fed is within sight, commence to peck at all sorts

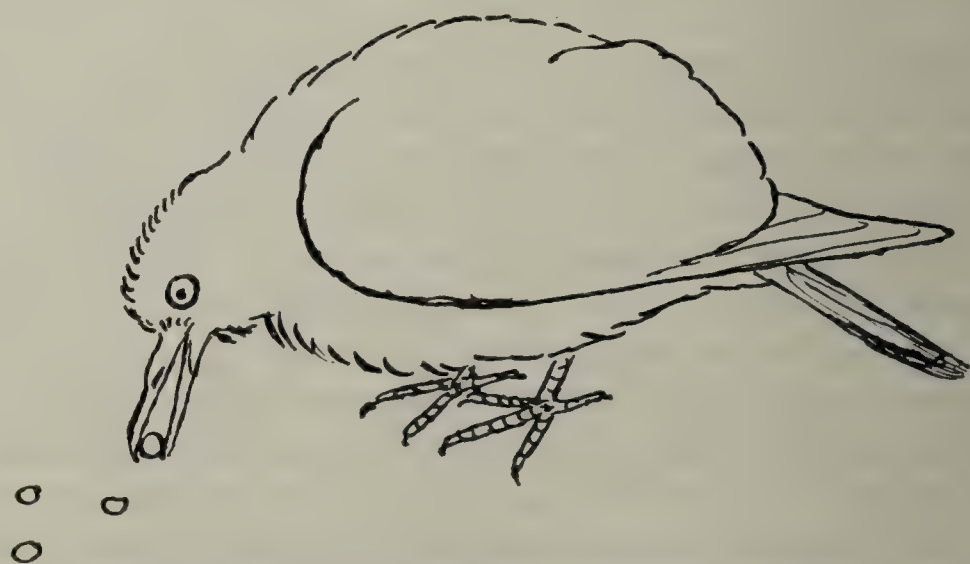


FIG. 3.—Starving "squeaker" beginning to feed.

of small objects that contrast to some degree with the substrate. These are picked up, held a moment in the tip of the bill, and dropped again. If some edible seeds, such as grains of wheat or dari, are found, the bird will almost invariably eat them. The first grain to be eaten will, however, be picked up and dropped again many times before it is finally swallowed. The second will be taken with much less hesitation, and the third—if the young Pigeon is really very hungry—probably with none at all. Whatever items are first swallowed will, at this first meal, be taken exclusively until they are all gone. This behaviour does not seem to be on quite the same plane of trial and error as the feeding of young game-bird chicks, since the young Pigeon does not usually swallow inedible substances. It may indeed refuse—even though starving—to eat many palatable foods at this stage.

If other Pigeons are present when the young one first starts to feed itself, its behaviour is somewhat different. It shows interest the moment it sees another Pigeon pick up food. The young bird at once runs to it, looks eagerly when it pecks again, and tries—always



unsuccessfully—to take the morsel from the other's bill tip at the moment it is picked up. This will be repeated again and again (perhaps interspersed with vain but frantic outbursts of food-begging), and one has the impression that the young one "knows" that the morsel actually taken by the old bird must be edible, but does not realize that other similar grains, over which it may be treading as it tries to seize the one in its unwitting mentor's bill, are equally so. Suddenly (perhaps as a result of clearly seeing the actual morsel the other picked up) realization comes, and the young Pigeon starts to eat, usually with much less hesitation over the first grain than it would have shown had it been "learning to feed" alone. None of the hesitation shown by the young Pigeon at this stage is due to insufficient maturation of the innate feeding movements. In a natural or feral state the young one does not feed itself until after it can fly well, and has left the nest. It can, however, as every pigeon-keeper knows, be taught to eat freely long before it can fly, by placing a supply of corn beside the nest, so that it constantly sees its parents feeding themselves. Also adult Pigeons confronted with some food new to them behave in the same manner except that they are—other things being equal—usually "quicker on the uptake". There is much individual variation in the speed of both adults and young when "learning" new foods.

Pigeons do not learn to eat bread so readily as they will seeds. Nevertheless, they soon do so if they are famishing and other Pigeons are eating it. Chopped-up cooked meat, another unnatural food like bread, but one that is given very little by the public, has been learnt by very few Pigeons (in London, at any rate) which will leave bread to scramble for it whilst the majority ignore meat if there are known foods, such as bread, available. Pigeons always "learn" more quickly to take strange seeds of small size—millet, dari, wheat, canary seed, hemp, etc.—than larger ones such as maize, tic beans, or shelled peanuts. This bears no relation to their choice when "experienced". It is difficult to see the utility of this behaviour. It can hardly be to guard against the ingestion of unsuitable food, since once it has convinced itself of the edibility of some new food and swallowed the first morsel, the Pigeon will always continue to eat. Thus it will—if there is enough available—consume as great a bulk of a food consisting of small particles as of larger.

Since the war the Pigeons in inner London have been fed chiefly with bread. Knowing that Pigeons that have once learned to eat them usually take peanuts in preference to other foods, I experimented by giving peanuts and millet to many different groups of London's Pigeons. It was obvious that the birds had no previous experience of millet. Its unfamiliar appearance when thrown to them often made them fly up in alarm and show fear when approaching the millet-strewn ground. Most have, however, eaten the millet after



only the briefest hesitant "picking up and dropping" and with two exceptions (out of very many hundreds tried), all the individuals to whom it was offered ate it within a few moments of the first birds to do so commencing. With peanuts (shelled but whole) the results have been otherwise. Of the birds which obviously did not "know" peanuts, many have refused them, often after picking them up several times. The majority of Wood-Pigeons to which I offered peanuts would not even pick them up, although the very few that "knew" them took them eagerly in preference to anything else. To my astonishment, a starving young Wood-Pigeon, so weakened by hunger that it tottered and stumbled repeatedly and showed no escape reactions, repeatedly refused to swallow even broken-up peanuts (which inexperienced pigeons take at first more readily than whole ones, because of size), although repeatedly seizing them eagerly when thrown to it and lifting and dropping them. This bird could not have been flying more than three weeks, it had learnt to eat bread, but had evidently not succeeded in finding sufficient food.

A young Feral Pigeon which fell from its nest (in South Kensington) when about three weeks old, was hand-reared, chiefly on milk-sop, wheat, peanuts, and millet, although it was also fed small amounts of meat, cheese, crushed egg-shell, grit, and acorns. After it had reached the age when it would normally have been fully independent (I had deliberately made no attempts to encourage or coerce it into feeding itself) it would no longer let itself be fed sop (which nestling pigeons take more eagerly than dry grain), closing and withdrawing its bill if it felt sop in my hand, but opening it and gulping eagerly if it felt grain or peanuts. At this period it began to pick up and swallow wheat or millet grains that were spilled during feeding. When I "pecked" at a peanut with my finger the bird immediately showed interest, but I had to repeat the process for several days running before it at last swallowed one of its own accord. Thereafter they became its favourite food. It did not eat bread—in spite of attempts to make it do so extending over several weeks—until I had kept it without food for some thirty hours. During this time bread, suitably broken up, had been available in dishes from which it habitually fed, but had been untouched. The bird was by then very hungry, but by no means near starvation point, and after a great deal of finger tapping and proffering bread in my hand, I at last persuaded it to eat a little. This specimen had come from a bread-fed population and the relative slowness with which it learned to eat this food suggests—as does observation of their condition—that the majority of "squeakers" in London are actually starving when they first learn to feed themselves. The same may be true for wild pigeons.

The above examples (and many similar ones that might be quoted) suggest that seeds from about millet to pea size present *C. livia* with



innately recognized visual and possibly also tactile stimuli. Such foods as bread seem to supply no such stimuli. Most Pigeons first begin to eat them through the example of others. Some individuals may learn to eat such foods either through extreme hunger inducing them to sample it or because it is offered by a human being from whom they are conditioned to expect edible gifts. Initially some bird or birds in each area *must* have learnt to eat bread in some such manner. Nevertheless, Pigeons that are starving may, *in the absence of others which take them*, refuse such foods as bread and peanuts if they have never seen them before. This they may do after repeatedly picking them up, holding them in the tip of the bill, and dropping them, thus showing that this behaviour pattern is not—as it often appears to be—a means by which a Pigeon can deduce the edibility of any object. It is true that Pigeons often discard bad grains (of a species they are accustomed to eat) after such treatment, but this may be due to the bird appreciating the difference between the visual and the tactile stimuli after it has learnt what “good” grains look and feel like. Jays (*Garrulus sp.*) and Wood-Pigeons will at once discard a bad acorn after similar treatment.

The eating of and apparently deliberate searching for invertebrate life sometimes shown by Pigeons that are feeding young, suggests an innate impulse to find such food and to be able to recognize it when found. It would be interesting to know whether this is a result of the birds being in a certain phase of the reproductive cycle or whether it depends on the diet being deficient, to some degree at least, of food elements needed at this period. I have noticed that captive Pigeons of many species are eager for such foods as cheese, cooked egg, and milk-sop when they have young. A pair of Turtle Doves (*Streptopelia turtur*) which I kept many years ago, and on which I made no precise or written observation, fed chiefly if not entirely on seeds except when feeding young, at which time they ate quantities of milk sop. A pair of Palm Doves (caught as adults) which I kept in Egypt (Goodwin, 1947) fed entirely on maize until they hatched their young, when they commenced to take broken-up peanuts and lentils—both foods of high protein content—as well. Whitman (1919) found that most of his pigeons would eat earthworms at this period, possibly their diet was somewhat faulty and the many weaknesses which he ascribed to hybrid ancestry may not always have had this as a sole cause. I have never known pigeons eat earthworms—though I have offered them to many species—but I strongly suspect that the London Wood-Pigeons do so.

The eating of greenfood (leaves and shoots of various plants) may perhaps often be due to an otherwise deficient diet. I have never seen Pigeons in the country eating greenstuff and none of the Domestic Pigeons I have kept have eaten it except in very small quantities.



On the other hand I have seen Domestic Pigeons that would devour cabbage, lettuce, and other greenstuff avidly. Some in the Cairo Zoo during the war years appeared to be fed on nothing but white maize, and these poor birds would fly madly to the wire to devour anything green offered to them, swallowing leaves, stalks of dandelions, and so on, in a manner unlike anything I have seen before or since.

*Roosting, Nesting, and Related Behaviour.*

Rock-Pigeons nest and roost in caves. Where available sea-caves appear to be preferred, probably a result of selection through survival, because persecution by man has fallen less heavily on populations in such sites. The nest is placed either on a ledge in a cave, or, less often, in a hole or crevice in the cliff-face. The nest-site is often in semi-darkness and usually well inside the cave. Little detailed evidence about roosting is available. On Fetlar, in the Shetland Isles, I was shown a very large, almost cathedral-like cave, from the roof of which depended large sloping ledges of rock. There was no place in this cave where a Pigeon could have nested, yet large numbers had evidently used it as a roosting place for many years. None were "at home" when I visited it (on an afternoon in late June, 1954), and it is possible that it was only used by non-breeding birds. In a small dark sea-cave occupied by an incubating pair, the cock roosted on a ledge near the nest. Much remains to be found out about the behaviour of the truly wild Pigeon, and a comparative study of feral populations is equally desirable. In some parts of the world Rock-Pigeons have taken to living in buildings. Where doing so their habitat preferences do not seem to differ from those of Feral Pigeons.

The roosting and nesting places chosen by Feral Pigeons are, in effect, the nearest artificial equivalents of natural sites. The girders under bridges, church belfries, ruined buildings, large railway stations, and old castles are commonly favourite haunts. Any sort of suitably sized hole, nook, or sheltered ledge may be used for nesting. If they fail to find any better place, a pair will sometimes nest on an exposed ledge, usually without success. Although the favourite roosting perch would seem to be the equivalent of "a ledge in a big cave" the birds often roost regularly on ledges or roofs with no shelter from above. They never roost "on the skyline" (although lost Homing Pigeons may, exceptionally, do so), but always with a solid wall of some sort on one side of them.

What are the essential "sign stimuli" that guide a Pigeon in its selection of a nesting or roosting site? That remains a question that perhaps some of our members will be stimulated to solve, and I can only offer some tentative suggestions. Pairs of Pigeons seeking a nesting site seem strongly attracted to any conspicuous "dark opening". I have often noticed in London that when new blocks of



flats are being built and have been nearly completed, but with empty spaces where the windows will be, nest-seeking Pigeons frequently enter them and attempt to breed. Whenever I have kept Domestic Pigeons a pair has sooner or later found the open trap-door of the garage loft—which from below appears a square black hole—and nested therein. Whether height, as such, in a building or cliff has any attraction for Pigeons—over and above that occasioned by its mere conspicuousness—I do not know, but am inclined to doubt it. Height after all is a relative matter, and the Rock Pigeon must usually after foraging fly downwards when it returns to its cave. For the actual nest itself, Pigeons like to get in some sort of hollow, or depression if on a ledge, this obviously being related not only, or not so much, to the greater security as to making the somewhat ill-constructed nest “stay put”. Taking advantage of this some pigeon-fanciers put earthenware nest-bowls in large and bare nesting boxes, and birds nest in them as the most suitable place available.

In contrast with the energy with which they will search for a suitable nesting place, Feral Pigeons often seem to lack initiative over roosting places. The many birds that one sees roosting night after night exposed to wind and rain could in most cases find better places, but once having established the habit of roosting in a particular place, it never seems to occur to them to seek for a better one. They will, however, often desert their roosting place if they are *frightened* at it by man or some other predator. What causes apparently unsuitable roosting places to be initially chosen is difficult to understand. Roosting on exposed ledges seems to be rather more general with Feral Pigeons of Homing Pigeon type and ancestry, but this may merely be because these tend to be more numerous in smaller, newer, towns with relatively few buildings that offer shelter. The disinclination to seek a fresh roosting place, except under the stimulus of fear, is easily explicable. So long as the bird remains alive and fit for reproduction, there will be no selection against individuals that stick to an accustomed roost in spite of discomfort. Indeed, since such a roost has for some time “proved safe” there may well be selection in their favour.

On the other hand there will be selection in favour of pairs that show initiative in seeking a suitable nest site, since the apparent optimal site for the adult—sheltered and in semi-darkness—is that where the young are most likely to be successfully reared. It may be mentioned that although in a pigeon-loft pairing often or usually takes place through a hen being attracted by a cock “calling to nest”, yet it is evident that in a feral state many pairs form prior to either partner having secured a nest-site. Also one can, of course, pair a cock and hen Domestic Pigeon just as surely (and a good deal more safely) by leaving them free *outside* the loft together by themselves as by shutting them in the male’s nest-box.



The nesting behaviour of Pigeons is well-known and has been described in some detail by many authors, correctly by Heinroth (1948), and with varying degrees of inaccuracy by most others. One point about the parental feeding, that so far as I recall is not mentioned by Heinroth, should be discussed, as it applies equally to other species of *Columbidae*, and is of importance to aviculturists. The parent at first feeds the squabs with pigeon's milk that forms in the upper part of the crop. When they are a few days old it begins



FIG. 4.—Pigeon feeding small young (from front).

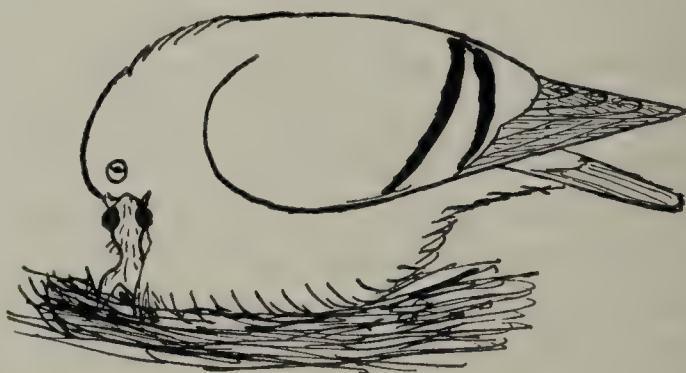


FIG. 4a.—Pigeon feeding small young (from side).

also to regurgitate the food in its crop, of which the young can at this age swallow only small or soft morsels. If one watches the parent feeding one will see that after each regurgitation it re-swallows some food in its gullet. At about four to five days old the squab's crop will contain pigeon's milk plus some small seeds (if these have been available to the adult), and perhaps some soft food or animal matter. A little later the young one can and does swallow anything the parent regurgitates.



The pigeon's milk, I suppose because it lies above the food in the main part of the crop, is fed off first at each feed. If both squabs are equally vigorous, both will get a share. Indeed, the parent often feeds both at once (see sketch). But if one of the young is older or stronger to a marked degree, it will usually be fed first. The weaker young one will get little or no pigeon's milk, and although its crop may be full after each feed, it will be malnourished. It will be weakly and badly fret-marked if it survives at all, although it may improve after fledging if food supplies are good. For the same reason a brood of three is seldom, if ever, completely successful. These circumstances are not likely to occur in a wild, or even a feral state, although exceptionally they may do so. But it will often happen that an aviculturist may wish one pair of doves to rear other young without sacrificing their own. In such cases I have found that if the weak young ones are fed—additionally to the parental feeding—with egg custard, a few mealworms and a very little chewed up lean meat, they will soon start to thrive and thereafter progress normally.

#### *Colour Varieties.*

In this brief description of the colours most prevalent in Feral Pigeons, I use the usual name given by pigeon-keepers in Britain. Unfortunately, in some parts, and in America, different terms are used for some colours.

*Blue.*—The natural colour of the Rock-Pigeon. General plumage blue-grey, usually pale blue-grey on wings, and sometimes also on underparts. Two conspicuous black bars across the wing, and a broad black bar at end of tail. Rump usually white or pale grey, but often same grey as rest of plumage. Neck and upper breast iridescent green and purple. A very common colour among Feral and Homing Pigeons.

*Blue Chequer.*—As in blue, but the wing bars wider and the rest of the wing feathers with black markings ("chequering"), giving a spotted effect. In dark blue chequers only a small grey mark may be left on each feather, and the closed wing appears very dark. In such birds the grey of the rest of the plumage is also darker, and the black spotting may extend to rump and flanks. The commonest colour among Feral and Homing Pigeons in Britain.

*Velvet.*—As dark blue chequer, but wing-coverts entirely black. All the "blue" colours may show a chestnut or rusty tinge on the black portions of the plumage, and may show a good deal of minor variation in shade of grey, type of chequering, amount and colour of neck gloss, and so on.

*Mealy.*—As in blue, but ground colour silvery or creamy grey, neck and breast usually tinged brown and with green and purple gloss, often rich chestnut-brown, head may be brown or mealy white,



in contrast to brown neck. Two brown bars across the wing, no tail bar.

*Red-chequers* and *Reds* have the same colours as mealies, but pattern (except for absence of tail bar) as in Blue Chequers and

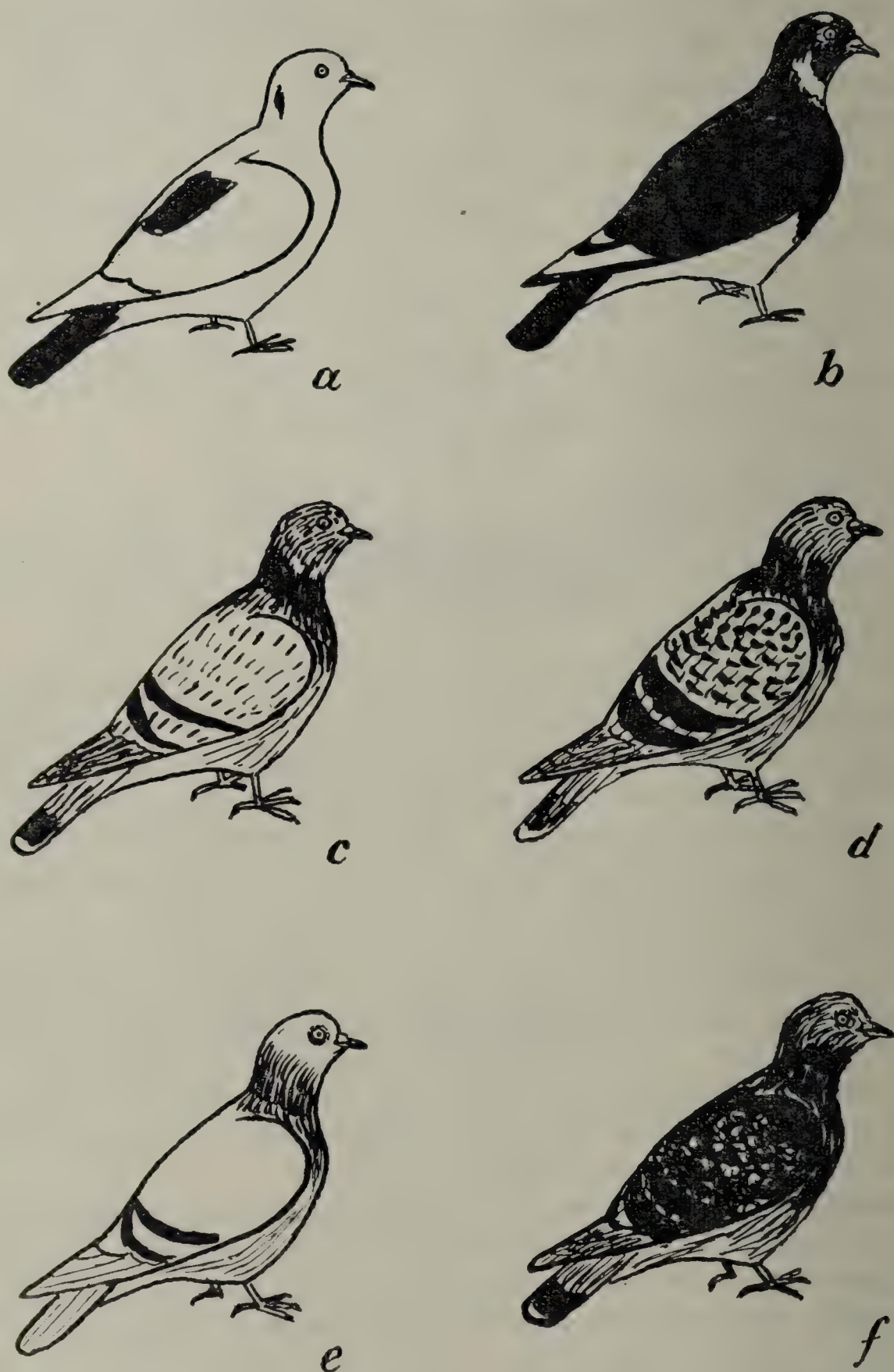


FIG. 5.—Some colour varieties. (a) Gay Pied ; (b) Black Pied ; (c) Blue ; (d) Light Blue Chequer ; (e) Mealy ; (f) Dark Blue Chequer. (For explanations see text.)



Velvets. The "Red" colours are usually rather infrequent in Feral Pigeons, except where these have been derived largely from Homing Pigeons, in which these colours are frequent.

*Grizzle*.—A pattern, difficult to describe, in which all the feathers are curiously streaked and intermixed with white. They vary from the "light print" which is predominantly white with dark-tipped primaries, and some dark feathers in its head and neck, through various shades of grizzled grey (with darker wing bars), and the same in the "red" colours. In juvenile plumage grizzles are usually much paler than they will be after moulting.

*Black*.—The deep solid black found in some fancy Pigeons is rare in feral birds. But specimens of a uniform slaty-black are not uncommon.

*Pieds*.—Any of the colours mentioned may be pied, that is, marked with white, the underparts, rump, primaries, and head being the parts most often affected. Such birds are common among Feral Pigeons in English towns. Gay-pieds—that is birds with more white than coloured plumage, are rarer. Pure white birds—other than first generation escapes—are most uncommon, although Gay-pieds coloured only on tail and scapulars are much less so.

*Silvers*.—A dilute form of blue, ground colour silvery cream, with grey-brown instead of black markings. Rather rare and, when they occur in feral population, almost always females.

*Barless Mealies*.—The term is sufficient description. Not uncommon (perhaps one in 2,000) in London.

Some other colours, such as mosaics occur very rarely (in feral populations). Most of the colour varieties described are subject to some variation. Thus blues may be "smoky", a dull dark grey ground colour on wing coverts; "silver blue", of a bright pale, silvery hue; "plummy" with pinkish eye-rims, a peculiar dulling of the plumage and much non-iridescent wine-red colour on the upper breast; or "pencilled" with slight black marks along the vanes of the wing-coverts. But it would have taken up too much space to describe fully such minor variants of each colour phase.

#### *Sexual Dimorphism and Juvenile Plumage.*

In the Rock-Pigeon the visible sexual differences are slight, and the birds are difficult to sex accurately from their appearance. Generally the male has a slightly bolder head, and the iridescence on the neck is more intense and often more extensive. In Homing Pigeons and Feral Pigeons that approach them in type the male usually shows a larger cere ("wattle" of pigeon-fanciers) at the base of the bill, and his bill and head are altogether bolder and coarser-looking. But unless one knows one is dealing with related birds this is often of little value. Some strains of Homing Pigeons have much larger bills and wattles



than others, and a hen of such strain may be bigger and coarser than a cock of another.

Pigeons of any of the "red" colours (I am talking now of Feral and Homing Pigeons, not of fancy varieties specially bred for colour), generally show a difference in colour by which they can be at once correctly sexed if in adult plumage. Most males show small blue-grey or black marks—like little streaks or splashes of ink in appearance—on the webbing of the tail and wing quills. In the females these marks if present at all, are brownish in colour. All the sons of a "red" hen Pigeon are always reds (mealies, red-pieds, red grizzles, red chequers, etc.), unless they are albinos, no matter what colour male she is paired to.

Juvenile Pigeons are generally duller than the adults, and have only a very little iridescence on the neck feathers, which are not bifurcated like the adults'. If they are going to have rich purplish colour or wine colour on the upper breast, the feathers of these parts are tipped with rusty brown. The "reds" are browner and more gingery than they



FIG. 6.—Juvenile, blacked-in areas on wings show adult-type plumage. (See text.)

will be after moulting, the "blues" duller and often darker, the chequers have their wing markings less distinct. Grizzles are usually much paler and are often almost entirely white, it is surprising to see the near-white juvenile moult into quite a dark bird, as it often does. Young blues sometimes have the wing-coverts edged with dull whitish. Sometimes a juvenile will show beautifully laced blackish or reddish edges to the feathers of its wing-coverts. Such birds moult out, as a rule, into very ordinary and unattractive "blue-pencils" or "strawberry mealies" (a sort of clouded pattern between a light red chequer and a mealy).

The juvenile usually shows two areas on the wing (see sketch) where the feathers—before it commences to moult—show the adult colour and pattern. The feathers in these areas are indeed not exactly the colour they will be, or rather will be replaced by after moulting, but they are very close to it, and in the more deceptively-coloured juveniles they enable one to guess pretty accurately what the bird will in fact look like when adult.



The young birds have dark greyish—sometimes nearly black—legs and feet, and their eyes are also dull and greyish in colour at first. In young white (albino) Pigeons the feet are pale salmon colour, although adult albinos have the same purplish red feet as other colours.

*Note.*—The line sketches are intended merely to make the written descriptions more lucid. They have no pretension to art or a detailed accuracy.

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## AN AVIARY POLICE FORCE

By DOROTHY A. JAKOBSSON (Ferndown, Dorset, England)

The best and least expensive way, in our opinion, for safeguarding one's birds from little wild creatures is to maintain a bodyguard of well-fed neuter cats. I stress well fed, as no weary, ill-nourished animal will delight in the sport of the chase. It may catch a stray mouse for food—if spry enough—and there the matter ends. My cats bring me in rats, stoats, weasels, mice, or young rabbits daily, and take no notice whatsoever of the doves when prowling around the aviaries. I am afraid they occasionally catch a wild bird, then what right have we to say them nay, who breed birds merely for food, or box hens in tiny cages that they may produce more eggs for our pleasure !

Lewes, Muezza, and Tangy Tim are real pets, and while always having access to the house and a cosy corner beside the fire in which to sleep, frequently toil out through rain or snow and bring home their catch in due season.



My aviaries are merely raised—on a foundation—a couple of bricks high, never once have I lost a bird through rats and the like. I must mention though that the actual sleeping quarters—where the doves are fed—are three feet up from the ground. All the aviaries are surrounded thickly with flowering shrubs, and the grass during flowering time is hay-high, giving perfect cover to any wild creature seeking such protection. Water also abounds in the vicinity—pools, a small stream, and boggy land near-by.

Perhaps it is not generally known that an old law—never repealed—still exists whereby anyone can be fined 5s. for not keeping a cat if a near-by householder can prove the vermin doing the damage came from the former's premises. Of course, in this age of high sounding phrases, the offence is termed "for not taking proper care in the destruction of obnoxious vermin". In days ago, it was so judged that a person might not have the money with which to buy mouse traps, but a cat could always be kept, and as it could be maintained, in the main, from table scraps there was absolutely no excuse for not having one.

Is this the real reason, I wonder, why cats are still untaxed when almost everything else upon the earth is?

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## SOME REFLECTIONS OF A SOFTBILL ENTHUSIAST

By CARL NAETHER (Sherman Oaks, California, U.S.A.)

For nearly twenty years I have kept quite a number of softbills year in and year out without interruption. So much effort, time, money, and above all, regard for the birds, have gone into this pastime that I should like to pass on a few of my reflections and reminiscences to other interested persons, in the hope that they may prove interesting as well as informative, and perhaps even helpful in some way.

Prior to moving into the beautiful San Fernando Valley in 1932, I had never kept softbills or, in fact, any kind of birds, except pigeons, which usually do not come under this classification. I well remember my modest beginnings: I started off with, of all creatures, foreign doves, getting a pair of Diamond Doves and other small varieties from the late Mr. Eighmey, of Costa Mesa, a dealer *and* a birdlover. Soon after, I obtained a variety of small finches, whose behaviour, however, seemed rather stereotyped to furnish continuous and lively interest for me over a period of years. Soon my attention was directed to singing softbills advertised in various domestic and foreign bird and pet journals. Then the fun—and also some work—began.

Happily do I recall my first softbill, a beautiful Shama Thrush,



supplied to me by the firm of Louis Ruhe in New York City. So eagerly did I look forward to this bird's arrival that I telephoned the railway express office half a dozen times in an attempt to ascertain its exact arrival either in Los Angeles or in Van Nuys. Finally, when word came that the bird had arrived in Van Nuys, a suburb of Sherman Oaks, I left my work in Los Angeles early and quickly in order to claim the precious bird shipment without further delay. When I got the shipping box home and opened it, the Shama hopped sprightly out of it and into the wire-cage I had readied for him, greeting me right then with a lovely little tune. This sort of greeting evidenced that the bird was in good health and apparently not at all fatigued from the four-day journey *en route* from New York to California. In those days no air-express service for birds was available. That first Shama proved to be one of the finest songsters it has been my pleasure and privilege to keep. But what pleased, even fascinated, me almost as much as his excellent singing was his cockiness and inclination to fight, his swiftness of flight in the room where he was kept (he was let out of the cage once a day for bathing and exercise), and his growing tameness and friendliness. All these attributes pointed to a bird possessed of overflowing energy, charm, and "personality". I shall always remember with delight the utter joyousness of the musical calls and whistles of that first Shama—in fact, I can hear them now as I type these lines. Alert from early morning until late evening, that handsome bird took notice of everything that went on within his view. Let a stranger approach, even at a distance, or a strange noise be heard, and the Shama would sound his sharp alarm note, whipping his long, beautiful tail all the while and scolding. Every day this bird would bathe in a large aluminium pan set outside his cage. He lived in apparent perfect health for three years, dying suddenly one forenoon of a stroke. Though greatly saddened by this Shama's passing, his unforgettable charm prompted me forthwith to try my luck with other softbills.

In the summer of 1933 there came a Clarino, or Solitaire—all the way from Brownsville, Texas, in a dirty little uncovered wire cage containing a few dried-up berries. In English and in German books I had read of the quite unusual, clarinet-like music made by this plain, brown-coloured bird, a specimen of which I had neither seen nor heard before. Acute was my disappointment when reluctantly I signed for the shipment at the express office, for the Clarino was in bad condition owing, no doubt, to lack of food and water. Head tucked in his wing-feathers, he was sitting listlessly in the bottom of the dirty cage as if resigned to an early demise. When I arrived home with the bird, I soon found that he was much too weak either to eat or to drink; so in order to save him, if at all possible, I forced a few drops of lukewarm milk down his throat, repeating the process—a rather delicate one for a beginner like me—at numerous intervals. It was my first experience



with forcing a bird to drink, but it was effective, for the bird began slowly to take an interest in his surroundings, but still he would not touch the soft-food mixture I had prepared for him. So, having read that Clarinos are fond of flies, I got busy at once and caught flies, numbers of them, till it got too dark—and I was greatly encouraged by the bird's taking them at first gingerly, then eagerly. By evening the Solitaire's plumage was almost smooth, and he did not bury his head in his wing-feathers any longer. I felt I had won the battle—with, of course, the bird's co-operation. Next morning, I looked after the Solitaire the very first thing, finding him quite well and willing to take mealworms and other food. Day after day this luminous-eyed bird improved, and it was not a week before he began to sing his flute-like melody which somehow carried me back to the stillness of the High Sierras, where I had journeyed in my younger days and where Solitaires usually build their nests in the shadow of waterfalls. So utterly different from any other bird's song was the Solitaire's that I could hardly trust my ears, for I did not know that any bird was capable of making such exquisite music. Though not as active as the Shama, and certainly not as nervous, this Solitaire, being easily cared for, became tame quickly. He especially relished freshly caught flies and moths, but he would also take mealworms.

These two good songsters constituted the beginning of my softbill venture, which to date has brought me many, many joys and occasional disappointments. Twenty years ago I was pretty ignorant of such birds' food requirements, even though I had made it my business right from the beginning to purchase and consult English and German authorities' writings on this subject. It seemed that in Europe during the greater part of the year, live ant-eggs constituted the principal food of captive softbills. It was asserted that they were so complete and effective in nutritive values as to satisfy almost any softbill's requirements completely—no additional foods being needed. But here in America live ant-eggs were not available. Of course, I eagerly read advertisements concerning various softbill food mixtures, purchasing this and that mixture in order to determine its merits. Always it was maintained that the food was "complete"—meaning that the bird fed with it required no other food, except perhaps a few live mealworms once or twice a day. Soon, however, I learned that my softbills did not like the commercial Mockingbird food, that they ate but very little of it, and that their general condition was not noticeably improved by it. Moreover, the birds would sing but little or not at all on this monotonous diet—to me a sure sign that their daily food lacked something quite essential.

So gradually I began to experiment by adding certain items to the soft-food, such as moistening it thoroughly with freshly grated raw carrot or sweet apple, enriching it with finely chopped hard-boiled



egg, boiled beefheart, or dried ant-eggs, first soaked in warm milk. I learned also that tastes of softbills differ widely, and that at times it requires considerable time and patience to accustom any softbill to a food he has not eaten before. I had often read in various foreign books that milksop was relished by certain species of softbills. However, my birds would have none of it—until I placed pieces of cut-up mealworms atop the milksop, so that every time the bird reached for a piece of mealworm, he also got a good taste of the milksop. By and by I gave the milksop without any worms—and it was taken. It consisted of spongecake and some Pabulum soaked in fresh, sweet milk, with some honey added. This mixture is a much-relished daily food of such birds as orioles, honeycreepers, flycatchers, and thrushes. I give it to them fresh once a day.

Though rather ignorant of many essential aspects of successful softbill keeping, I managed with the aid of good books to learn much about it. I soon found that Europe had a corner, so to speak, on dyed-in-the-wool softbill enthusiasts. All the worthwhile books on this subject were published in Europe. When it came to keeping in good health for long periods of time even the most delicate wrens, warblers, and flycatchers, English and German fanciers seemed to be the experts. They, so I read, had been at it for years and years. Their magazines and books were filled with fascinating, practical experience articles on softbill keeping and training, while ours in America were almost wholly devoted to information pertaining to hardbills. Moreover, I soon learned that most American bird-fanciers consider the keeping of softbills, whether in cages or in aviaries, as entailing far too much trouble in feeding and in cleaning. Moreover, they usually wish their hobbies to pay expenses. Since it is practically impossible to raise softbills in captivity in appreciable number and since the market for them is limited, most American birdmen and women much prefer to keep finches and parrotlike birds, which breed more or less freely in captivity and which can be sold readily to other fanciers or to dealers.

So, taking everything into consideration, the best I could do in caring for my softbills was to rely on the printed suggestions found in British and German books and papers. *AVICULTURAL MAGAZINE*, *Cage Birds*, and *Die Gefiederte Welt*—in those early years of my hobby—frequently brought articles on how best to care for certain, more or less delicate, softbills. Moreover, I obtained some sound help from several fellow fanciers in California, in particular Alex Isenberg and Eric Kinsey, both of whom maintain to this day quite extensive collections of softbills, the former specializing mainly in foreign, the latter mainly in domestic species. Both, however, live five hundred miles distant. Detailed letters describing the various and ingenious foods supplied captive domestic softbills, received from Eric Kinsey,



and a subsequent visit to his aviaries, proved quite enlightening, as did a visit also to Alex Isenberg's avian establishment.

It was inevitable that in the beginning of my softbill hobby I should make blunders, resulting largely from giving the wrong foods. Thus, a disastrous blunder I made was to feed a delicate, wren-like bird quite a number of mealworms on the advice of a Japanese bird-dealer in Los Angeles from whom I had purchased the lively creature. If I remember correctly, the bird was a Japanese Wren. At any rate, it was modestly coloured—brown all over, tiny, and very, very lively. A Japanese woman who was in the store at the time of my purchase, gave an imitation of the bird's call which, to the best of my recollection, was something like "Uguisu, Uguisu!" Sorry to relate, the bird did not utter these—or any other—notes while he was in my possession, where he lived but three or four days. Had I cut the mealworms into small pieces or had I soaked them in warm water to soften the hard shells, this charming, vivacious wren might have been mine to enjoy and to care for a long time. It could not, of course, digest the hard-shelled worms. For days the loss of this rare little bird saddened me. Hard as I tried to obtain another specimen—they cost \$15 which at that time was a good price—such was not to be had since but few had been imported from the Orient. The loss of this bird taught me an important lesson—carefully to adapt the kind and the texture of the food, be it in natural or in commercial form, to the needs of each individual bird. Different softbills have different tastes and these manifest themselves in a variety of preferred foods. It is up to their keeper to determine as best he can, what foods keep certain birds in sound condition year in and year out. If he is genuinely concerned about the welfare of his feathered charges—wants to see them healthy and happy day in and day out—he will constantly endeavour to find new items of food and new food combinations, trying them out very carefully and gradually so that his birds' digestive mechanisms may adjust themselves readily to them, and without any ill after-effects. In other words, the new food or foods are given *in addition* to the regular daily menu and the birds are left to try them out themselves. It was in this manner that I learned that most of my softbills like peanut butter very much. Now I keep jars of this nutritious item in every aviary the year round. Even my foreign doves take peanut butter with gusto. But Indian flycatchers, Yuhinas, and shrike, added recently to my little collection, have not touched the peanut butter as yet. They no doubt will in due course of time. I never thought that softbills such as, for instance, Golden-fronted Fruitsuckers would eat fresh lettuce. Nevertheless, such is the case with mine—as well as with other softbills. It must be quite tasty to these birds because they have been in my aviaries for many years, a number of them for fifteen years, and quite a few over ten years. Recently I "discovered" pecan-meal as



making an excellent addition to the softbill mixture. Finely ground, it is easily mixed with the other items. The birds eat it readily and apparently it does them good. Not long ago I read an advertisement offering *wingless* fruit flies (*drosophila*) to fish fanciers. I purchased several cultures of these small flies in glass bottles some weeks ago, and I have been feeding the flies daily to a pair of jaunty Yuhinas. They make a lot of "musical fuss" the moment I place a dish with fifty or more of the tiny flies in their cage and they eat them in a hurry. I am convinced that these flies would serve as an excellent live food also for wrens, sunbirds, and humming birds, even though the two last mentioned might prefer flies that can fly. But my Canyon Wren takes them avidly. Since these wingless flies, feeding on decaying fruit, multiply fast, they are easily and quickly raised in numbers. In all softbill feeding, it is self-evident that the more natural we can constitute the daily diet, the more conducive it is likely to be to the birds' health and general well-being. Live food being the most important item in most softbills' natural diet, I make it my business to take every spider, moth, butterfly, angleworm, beetle, etc., to my birds the moment I catch it—take it, mind you, with a sort of boyish triumph as if I were bringing them an unusual delicacy—and maybe I am! Always I find certain birds requiring some extra attention, extra care, extra food. Softbills exude individuality. My business is to cater to this charming trait in every possible way. Years ago I learned that giving my birds extra attention pays large dividends—in improved health of the birds, in more and better singing, in greater tameness and friendliness. Over the years certain birds, such as a Solitaire, a fruitsucker, a Shama, and a wren, simply *expect* extra service from me. They fly to me the moment I approach their cage or enter their abode, begging for titbits, which usually they get. I try never to forget that my birds are my responsibility—my *very deserving* responsibility!

But to return briefly to one of my main topics—initial blunders. Another blunder, one that I made several times, caused me considerable chagrin. A fellow birdlover (?), calling at my aviaries, would persuade me to let him have this or that bird, which he wanted "oh, so terribly much!" Twice I have given in to such pleas, only to be very much disappointed some weeks later by the report that this person, not finding the birds to his liking, disposed of them on short notice and without making any sincere effort to learn their good qualities and to fit them into his collection. In this connection my many years of keeping softbills have made me sensitive to the birds' feelings and reactions, perhaps too much so. Softbills' feelings, it seems to me, are very easily upset. Being captive, they must endure so much fear from man, so much cruelty—directly and indirectly.

Take the average softbill. First of all, it is trapped in its wild habitat, stuck in a small box or cage, shipped over long and noisy



distances, then caught again, only to be again transferred from cage to cage and aviary to aviary. Its whole life pattern is being changed by this process, changed suddenly, often ruthlessly. The bird has to change many of his habits to conform to his keeper's whims and wishes. It is in constant fear of being caught up, dashing against cage-bars or aviary wire in a mad attempt to escape the grasping hand or enveloping net. No wonder that many softbills (and hardbills, too) require months, if indeed not years, to recover from such maltreatment. Some of them never recover, shown partly by the fact that they simply will not sing or breed in captivity, not only because they are wholly out of their accustomed *milieu*, but because they are mentally and physically shocked. Other softbills regain, after a time, their ability to sing, provided they are given humane treatment and patient care.

When one considers the fear which captive birds are subjected to, especially when caught up and transported, one finds it difficult indeed to justify the hobby of keeping such live birds as softbills. Many birds simply die from the effects of fear—the strain is too much for their delicate constitutions. Assuredly, the hobby of keeping softbills is in most cases nothing more than just that—a hobby, a personal pastime. It has practically no so-called scientific aspects or values. To be sure, occasionally this or that, more or less rare, species of softbill is successfully raised in captivity, and a general account of its breeding is reported and published in the avian press. But in many instances this account is far too general, too superficial to disclose essential habits of either parent birds or youngsters, or both. A report of such habits to have even the semblance of scientific character and value, would have to be based on continuous, day-in and day-out, very thorough observation of certain birds' behaviour. But such thorough-going observations are foreign to most keepers of softbills since, apparently, their recording would entail too much concentrated effort and writing. If, then, a species of foreign softbill has been induced to breed in captivity, and does so successfully, by all means let its owner report this success—but as a personal achievement more or less, not as a scientific one. And let such report be written from the standpoint of the hobbyist so that other hobbyists may benefit from it. It is regrettable that so many keepers of softbills cannot or will not *communicate* their observations and experiences through the printed word to other like-minded men and women. Go through the issues of this magazine, for example, and count the number of articles devoted to softbill-keeping and you will find few of them, not because softbills are not kept by many people and often in considerable numbers, but because their owners are reluctant to report on their collections, often greatly underestimating the value of their observations and their experience.

I have kept softbills for nearly twenty years—and I keep them to-day



—for one principal reason—their ability to sing. So I more or less confine my hobby to obtaining male birds of singing species and try to induce them by means of good care to entertain and inspire me with their songs. To me it is a never-failing, joyous surprise to hear a recently acquired bird sing for the first time. Shama and Dhyal Thrushes have, on the whole, proved my finest songsters, followed by European Nightingales, White-Cheeked Jay-Thrushes (really whistlers) European Blackbirds, and many other species. Freshly imported softbills, if not frightened out of their wits by frequent and rough handling in transport, will sometimes sing soon after arrival in my aviaries. Some, however, will require a season or two of acclimatizing and adjusting to new surroundings and of freeing themselves, so to speak, from shock before they will sing at all. In captivity some softbills' ability to sing will improve from year to year. The exact reason for this condition I do not know, unless it be due to a more nutritious and eminently regular diet than that obtained by birds which are at liberty and on their own, and perhaps also to an increased feeling of "at-homeness". Anyhow, I have learned that it pays to give a bird ample time—a year or more—in which to prove his singing ability. In certain instances he may need that much time to recover from the effects of fright induced by having been caught, boxed up, and shipped—to him thoroughly fearful and wholly unnatural experiences.

Whether to keep softbills in cages or in aviaries is assuredly a debatable matter. It depends largely, so it would seem to me, on the specific purpose for which the birds have been acquired and for which they are meant to be kept. If that purpose is to tame a softbill quickly and convert him into a pet or to observe his habits at close range over a period of time, then the cage is by all odds the proper enclosure for the bird. If, on the other hand, a softbill is to lend avian atmosphere to a piece of wired-in outdoors, or to breed, then the aviary is the proper place for him. Planted aviaries are best for most softbills since they afford them the most natural environment and protection in captivity. By nature shy, most softbills will hide in bush or shrub, especially when they see strange persons or animals approaching. Usually, therefore, an aviary is not as effective a means of showing off birds as is a cage. Even those birds which ordinarily are so tame as to take mealworms from their keeper's hand will, when sighting strangers, go into hiding. Here I recall the enterprising birdman who filled his spacious, partially planted aviaries with numerous softbills only to discover that, as a rule, they would stay out of sight, so that most of the time neither he nor members of his family, nor friends could see and enjoy his colourful collection. For a time he vowed "I'll cut out the shrubbery. I want to *see* my birds. I'll soon fix things!" However, he soon found that among members of a large collection of softbills, such as he maintained for a time, frequent fights,



often resulting in serious injury to smaller or weaker birds, occur, unless the birds have close at hand a ready avenue of escape, such as the leafage of shrubs and trees planted in the aviary. When, more or less frequently, this same hobbyist found valuable birds dead on the floors of his aviaries, he became convinced of the birds' need for shelter, for hiding places, which he then supplied promptly. Since most softbills do not damage living plants, their aviaries may be thickly planted to suit their needs for protection and also their keeper's needs for attractive landscaping. Except for the birds, assuredly nothing gives to an aviary a more pleasing and a more natural setting than various living plants, deciduous as well as evergreens. They lend it that indispensable out-of-door atmosphere, which invites favourable attention from its owner and often favourable comments from his friends and visitors.

In conclusion, my keeping of softbills has afforded me hours upon hours of quiet relaxation. The work of caring for and feeding my birds has been—and is—pleasant and not time-consuming. Now, with between fifty and sixty softbills, largely in aviaries, the preparation of the various foods as well as the actual feeding requires only an hour or so—and a very pleasant hour it is, this fairly close association with my feathered friends which, given reasonably good and regular care, repay me handsomely in so many ways, not the least of which is their fine singing. By some persons the hobby of keeping softbills is considered expensive, but I have not found it so. What if I pay, say, fifty dollars for a Shama Thrush or a European Nightingale! Assuming that I can maintain such a bird in sound health for at least ten years, the initial purchase price thus spread over the bird's life-span in my aviaries is quite reasonable. The major drawback to this hobby, in my opinion, is that it tends to keep its followers too much at home, for it is usually difficult to find a reliable man or woman, or one sufficiently interested, to care for one's softbills during a prolonged absence. Moreover, one is usually reluctant to entrust one's precious birds into the hands of a stranger for fear he or she might neglect them, since such neglect, whether intended or not, can easily prove fatal with more or less delicate birds accustomed to being given precise care.

All in all, I believe that softbills make remarkably interesting and intelligent subjects for a stimulating hobby, owing largely to their unique character. And they repay their keeper variously and generously for whatever attention and care he devotes to them day in and day out the whole year through.

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## REPORT ON PROPAGATION OF HYBRID SONNERAT'S JUNGLE FOWL

By DAVID M. JOHNSON (Port Orchard, Washington State, U.S.A.)

Since my report of a year ago we have learned a considerable amount by trial and error in propagating our birds.

We find that new blood is a most important factor in producing chicks that are biologically proficient, with the will to hatch well and with constitutions for good stamina or low mortality. The question arises from time to time, why cross Grey Jungle Fowl with any fowl of another species regardless of what breed of that species it may be? The answer to that is that Grey Jungles or *sonnerati* are limited in number in this country and in need of new imported blood to rejuvenate them. *Sonnerati* are not too prolific in the first place, laying from four to seven eggs per clutch in a brief spring season, their autumn bloom after eclipse being too late in a northern latitude when the sun is rapidly leaving us, while hybrid birds and back crosses are so prolific, producing an abundance of eggs comparable to poultry.

Birds produced from hybrid cocks and *sonnerati* hens, which we may refer to here as  $\frac{3}{4}$  Sonnerat's, all have the general appearance of pure *sonnerati* including the inherent wildness if not more wild.

We have learned that our best birds from all standpoints are those obtained from cock  $\frac{3}{4}$  *sonnerati*  $\frac{1}{4}$  Bankaiva crossed on Cornish Indian Game hens. These are the chicks so much in demand this season which we call "Johnsoni" 2.

They come as much alike as peas in a pod in uniformity of shape and colouring with all the qualities one would wish to obtain in a bird lovely to behold.

It is birds of this type we are exporting now to southern States and overseas, some 30 odd in number, which will be tried out in rehabilitation projects, habitats believed suitable to it as birds potentially for the coverts.

We believe there is much future for it as a wild bird as it retains all the wild and sharp-witted instincts of *sonnerati* and its distaste for captivity. Its powers and willingness for flight are all one could wish for, comparable to pheasant in flight.

We find that Cornish, or any of the true games, are the best medium for crossing as it makes a harmonious blend of no offshoots or mutations, no erect tails or surplus combs and wattles indicating the stigma of domestic degeneracy of most fowls.

It has been our hope that more aviculturists would experiment on the establishing of their own birds from original crosses so that we could exchange birds of different blood lines of no relation to one another



and who could introduce new Sonnerat's Grey Jungle Fowl blood to their flocks from time to time as the need shows itself.

A strain almost identical to pure *sonnerati* could be established with strong constitutions and a potential to abundance of egg production and prolific aptitude. Our  $\frac{3}{4}$  cocks inherit the beautiful cape or hackle with the waxy dots as in *sonnerati* except the spots are slightly narrower.

Our experience in the rearing of chicks is that they do not thrive well in confinement and under artificial conditions. They are birds of energy, lovers of freedom, work hard for a living and seem to derive things from the earth essential to their welfare and good health. Free range or semi-enclosure seems to be essential, and they are more carnivorous and less granivorous than domestic fowl.

There has been no mortality from illness or disease in spite of our cold overcast sky and altogether reluctant summer to date.

Our parent birds are already going into eclipse for the season (July, 1954).

\* \* \*

## BAUDIN'S COCKATOO

(*Calyptorhynchus baudini*)

By JOHN YEALLAND (Zoological Society of London)

Baudin's, or the White-tailed Black Cockatoo, originally described and figured by Lear in 1832, is a native of forested areas of south-western Australia.

Gould says of it: "Like other members of the genus, it frequents the large forests of *Eucalypti* and the belts of *Banksiae*, upon the seeds of which it mainly subsists; occasionally it seeks its food on the ground, when insects, fallen seeds, etc., are equally partaken of; the larvae of moths and other insects are extracted by it from the trunks and limbs of such trees as are infested by them."

Mathews (*Birds of Australia*, vol. vi) quotes Tom Carter as having observed that: "This is the common Cockatoo of south-west Australia and is found as far north as the Murchison River. They associate in flocks when the breeding season is over . . . At times a flock will settle in an orchard, and do great damage in a very short time to the buds and young shoots of the trees . . . The breeding season about Broome Hill seemed to commence in August and continue until November. Two eggs appear to be the full clutch, and very frequently one egg is not hatched . . . The fledged young birds are fed by the parents for many weeks after leaving the nest; thus on 10th February, 1914, I noted young birds being fed by adults . . ."

The nest is situated in a hollow tree, usually at a considerable height from the ground. At what age breeding commences is, so far as I am aware, not known.





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[Zoological Society of London

BAUDIN'S COCKATOO.

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Among other interesting observations on this bird, Sir Edward Hallstrom states (*Foreign Birds*, vol. 20, No. 4) : "The White-tailed Cockatoo has lately been declared a pest, as it has formed a habit of destroying apples in search of the pips."

Thus, it seems, yet another beautiful and interesting bird is threatened with extinction.

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## BREEDING OF COMMON RHEA IN ZOOLOGICAL GARDENS, ADELAIDE, AUSTRALIA.

By VINCENT D. HAGGARD (Director)

In 1938 Adelaide Zoological Gardens acquired a solitary hen Common Rhea (*Rhea rothschildi*), and it was not until thirteen years later that a mate was obtained for her. In the meantime she regularly produced eggs which, incidentally, proved excellent for culinary purposes such as omelettes and scrambled egg, these being not too strong in flavour as might have been expected.

Late in 1951 it was arranged with Taronga Park Zoo, Sydney, that we should have a male on loan for mating purposes. This bird arrived by air on 22nd November, 1951, and the two were placed together soon afterwards.

The first egg was laid on 5th December and others at irregular intervals, eight having been laid by 13th January. In the meantime three eggs had been broken by the birds and all were then removed from the yard as they appeared and held until the male showed signs of commencing incubation. In anticipation of this a nest had been hollowed out in the ground underneath a tree and an egg placed therein.

The male sat on this for a short time on 13th January and the other remaining four eggs were then placed under him. Subsequent to this the hen laid a further seven eggs, the male ultimately covering a total clutch of twelve. It followed, therefore, that he had been sitting a considerable time before the last egg was laid and that the first chick would make its appearance long before the last eggs were expected to hatch.

Incubation period is about forty days and the first chick appeared on schedule on 21st February. There was something abnormal about the arrival of this little stranger, as it was found early in the day at a considerable distance from the nest, together with the remains of the egg from which it emerged. This chick was placed in a box and kept in warm sunlight until later in the day when an attempt was made to place it under the brooding male. However, he gave it several vicious pecks and it was therefore placed in a warm brooder overnight. Next morning a second chick was found in circumstances



similar to the arrival of the first, and the two were placed in the brooder out in the sunlight which was nice and mild at the time. At this stage they were too young to be in need of food, but both showed an interest in shell-grit and swallowed a few pieces. Instinct was already prompting them to take in this necessary adjunct to assist in digestion of food.

Late in the second day three more chicks had hatched and the male was by then looking upon them with a more kindly eye; the opportunity was therefore taken to return to him the first two arrivals. The score was now five. On the third day a sixth chick hatched and the proud father came off the nest the following day, leaving six unhatched eggs. This eventuality had been foreseen, owing to seven eggs being laid some days after incubation had commenced, and an incubator had been warmed up in advance in readiness to carry on with the job. Two of the eggs were obviously no good, but the other four were placed in the incubator although hopes were not high of getting more chicks. However, much to our delight, about a week later three more new arrivals appeared at odd intervals. These were kept in the brooder for several days till they gained strength, then being transferred to father's care. He accepted them readily enough but there was a very noticeable disparity in their size compared with their elder brethren, this difference persisting for several months when it became more difficult to differentiate between them.

At no stage after the eggs were laid did the hen evince any interest in the proceedings and, after the arrival of the chicks, it was deemed advisable to remove her from the yard as her attentions were inclined to be hostile rather than maternal. Early every evening and when the weather was cool, father would sit down and fluff out his wings and the chicks would snuggle underneath just as domestic poultry chicks do. He proved a good parent and not one chick was lost.

When about four months old, five chicks were sent by air to Taronga Park Zoo, one in exchange for "father" who was retained and four as Taronga's share of the "dividend" resulting from the satisfactory arrangement entered into earlier.

*Summary.*

5.12.51	First egg laid.	
14.1.52	Male commenced incubation.	
21.2.52	First chick hatched	} by male.
22.2.52	Four chicks hatched	
23.2.52	One chick hatched	
1.3.52	Two chicks hatched	} by incubator.
2.3.52	One chick hatched	

In subsequent seasons we have bred numerous Rhea chicks and, in fact, at the time of writing the male is "busy" incubating another clutch of eggs.



It might be thought that undue importance was attached to the breeding of this species which has since proved very easy to rear. It is pointed out, however, that Australian Zoological Gardens are subject to very restrictive quarantine regulations, and several years prior to the first breeding referred to, a complete ban was placed on the importation of all birds from anywhere in the world except New Zealand, where quarantine regulations are equally restrictive. The reader will readily understand, therefore, the importance that Australian Zoological Gardens place on the breeding of foreign birds which, unfortunately, can no longer be imported. Unless we can breed from the stock of exotic birds in our possession the species gradually becomes extinct in our Zoological Gardens as individuals die out.

We hopefully look forward to the day when perhaps the severe restrictions might be somewhat ameliorated, but in the meantime must do the best we can in the circumstances. We envy Zoological Gardens in other parts of the world which operate under much more liberal quarantine regulations and which, with certain reservations, can make a choice from the birds of the world.

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## BREEDING THE CANARY-WINGED PARRAKEET

(*Brotogeris versicolurus chiriri*)

By E. N. T. VANE (Ballinger, Bucks, England)

Records of the breeding of *Brotogeris* parakeets are few, probably because they are such delightfully finger-tame pets that the opportunity to reproduce is seldom given them. Peters lists three subspecies of *versicolurus*, regarding the Canary-wing as only subspecifically different from the Whitewing, yet the All-green he considers as a different species. When the Parrot ban was raised recently a number of Canary-wings came over and among the consignments it was not unusual to find an occasional odd specimen of either of the above-mentioned birds.

Some specimens appear to be considerably larger than others, but as all the birds in each consignment are generally of the same size, this feature is possibly only due to a local race variation. The distribution is rather wide, ranging from Eastern Bolivia to Argentine, Eastern Brazil, and Paraguay.

In setting out to breed them, the first obstacle is to sex them correctly. There is no external sexual distinction; South American parakeets are very difficult to sex by the pelvic bone test, as these are much more close set and elongated than African or Australian birds, but when in breeding condition there is a noticeable variation in the opening in the exes. This definitely disappears when breeding is over and it was quite impossible to tell my breeding pair when they were eventually brought



in, although I knew perfectly well which was which as the male had a slightly upturned toenail on one foot. They had been in my possession over a year before all doubts on this point were removed. According to some old writers the hen has a less deeply notched and narrower bill and her head is rounder and smaller than the cock's. If anything, my hen is larger than her mate, but they are practically indistinguishable. Her bill is less notched on one side than the other, in other words it is impossible to sex them by sight.

For the first year they were kept in a cage indoors as they were pinioned and unable to fly at all. They were absolutely fearless of human beings and appeared fully conscious of their superiority. They chattered incessantly and made a great noise when certain programmes were on the radio or one attempted to speak on the telephone. When they were fed they always came down to wait for the fresh food and used to bite my fingers impatiently; it would have been perfectly easy to tame them to sit on one's finger, but I always hoped to breed them so did not encourage them to become over-familiar.

During the winter of 1953-4 they moulted out and grew their flight feathers, the cock being the first to do so. It now became possible to distinguish their sex as the cock sometimes fed the hen and it was then noted that he had one upturned toenail. At the end of April they were moved to a small aviary facing south, 6 feet long, 6 feet high, and 3 feet wide, with half of the roof covered in and the whole of the back protected on the north with asbestos sheet. There was no completely enclosed shelter, but 2 feet from the rear a sheet of windowlite afforded protection from wind and rain, and behind this screen their food was supplied through a service door. A large, solid nest-box about 18 inches deep and 9 inches square, with 3 inches of peat mould in the bottom, was fixed to the rear of the flight. To start with they did not use the box for roosting, but were sensible enough to get right at the rear high up under cover, which was just as well as mid-winter returned early in May and they had to be brought in once more. When roosting they like to hang upside down on the wires both in cage and aviary. A second attempt was started on the 8th May, and by the 21st they began to roost in the box, and a week later the cock was feeding the hen regularly.

Their demeanour in the flight did not change, they were still perfectly fearless and friendly though when they came nibbling at my fingers the cock began to scold rather badly and sometimes bit rather hard. It was plain that with the approach of breeding operations he was going to be somewhat vicious and it would be unwise to associate more than one pair in a flight at this time. They made much less noise in the aviary, only chattering when they saw anyone coming round to see them. They ignored some lovebirds in an adjoining flight unless they hung on the wire, but as this was double and spaced



one inch apart no harm could result, though without this precaution I fear there would have been many toes missing by the end of the season.

On the 10th June they were seen mating. This was accomplished standing side by side on the perch gripping their left and right feet together as if they were "hand-in-hand". The box being hung outside the flight I was able to inspect it without their having any idea that I was doing so. As soon as their food was supplied in the morning they were so busy examining it and scolding me through the service door that I could safely look in. The box was perfectly clean, a certain amount of whittling had been done and a hollow made in the peat mould in one corner. No materials were taken in.

The first egg was laid on 11th June. There were two on the 13th, and the hen began to spend more time in the box. On the 20th she was off feeding and there were five eggs a little larger than a Budgerigar's and more elongated. She had been almost continually in the box since the 13th, and I assumed she had been sitting from the second egg and they would probably hatch about 1st July, though the eggs appeared so light in colour that I hardly expected them to be fertile.

This fear mounted when I was next able to inspect the nest on 1st July. Still five eggs and not very fertile-looking. The box was right next to the feeding trap and the hen sat close every morning until I had moved two or three flights away, when she immediately came off and started feeding ravenously. I did not wish to disturb her unnecessarily so did not go back and interfere.

On the 11th July I looked once more and was very disappointed to find still five eggs which did not look particularly "heavy". I decided in desperation to give them three more days. On the 14th, when I went to remove them two looked as though they had something inside, so I left them and was most thankful the next morning I had done so as three eggs had hatched on the 15th within the twenty-four hours. On the 16th all five had hatched. The period of incubation is, therefore, a lengthy one of about twenty-six days at least. The young were entirely naked, just like Budgerigars, which might, therefore, be used as fosters if the long incubation period is allowed for by moving the eggs. They were slow in developing, being completely naked until ten days old. On the 30th (fifteen days) the feather tracts could be seen forming, there was no down, their eyes were black and still unopened, the beaks were white—not black as I once saw them described.

Their eyes were really open on 8th August (twenty-four days old) by which time the feathers were opening and showing yellow and green. By the 18th their bills were horn colour like the adults, and they were looking extremely well—one had disappeared in the early days. All



the eggs had hatched, but they were never interfered with beyond the unsuspected inspections from the back, all that one could see was a tangled bunch of young birds and possibly the last to hatch did not get its fair share and was lost.

The hen did all the incubating, the cock joining her at night in the box when he may have assisted in these duties, but she only came off at short regular intervals to feed and exercise. Both birds remained perfectly fearless and literally finger tame, yet aggressive and a little vicious, especially the cock, who was a model parent, spending the whole day preparing the family meals; he scarcely left the food bowl which was filled twice daily. Enormous amounts of greenfood were consumed.

The first young one to leave the nest made the effort on 3rd September, just eight weeks from the date of hatching. It was exactly like its parents but a little smaller and the bill was obviously immature. It stayed out all day, but as it was cold in the evening he was put back into the nest at nightfall. Two came out on the 5th and again were replaced at night. On the 6th all four fledged and made a very pleasant sight on the perch together in a row with mother and father on the outsides. One was rather less steady on the wing than the others. On 8th September they all stayed out as I neglected them by attending the B.A.C. dinner, but the night was fine and they appeared none the worse.

On the 9th it rained and rained, just like an English summer, and I was very sad to find the youngest one lying on its back with its feet in the air in a pool of water an inch deep. I picked him up and was about to throw his body away when I discovered he still had a spark of life left. I brought him in and held him in front of an electric fire fully convinced that I was wasting my time, but in an astonishingly short time he recovered and within two hours he was sitting on my finger quite dry and preening himself. To cut a long story short, he was hand-reared and was feeding himself in ten days. He was given soaked bread rusks with a little oatmeal and peanut butter and Virol. He also had a little apple, a daily dose of abidec, and in a few weeks he had caught up his brothers, with whom he is now reunited although he is much steadier than they.

The other young stayed out in the aviary until the end of October. They did not go back into the nest to roost, but sat side by side on a perch, the parents hanging from the wire overhead. On one occasion the temperature dropped to 25 degrees before they were brought in.

Their food is mainly canary (mazagan), with a quarter part of white millet, one-eighth part sunflower, a few oats, and a small ration of hemp whilst being reared. They are very fond of fruit and had a slice of apple or pear daily each, occasionally a piece of banana as I understand that most South American Indians feed them on this



almost exclusively. They did not care for millet sprays much. Every day they had moistened brown bread rusks and sprouted canary seed. They consume a large quantity of greenfood, starting in the early part of the season on dandelion leaves, then their seeding heads, groundsel, chickweed, sow thistle, and later on all seeding weeds. They delighted in chewing up a huge whole sow-thistle.

Given a true pair and the right accommodation, which is very modest, I believe there is every hope that these delightful little birds would establish themselves in our aviaries, but I do think that each breeding pair requires separate quarters.

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As described above, E. N. T. Vane has bred the Canary-winged Parrakeet (*Brotogeris versicolurus chiriri*). It is believed that this may be a first success.

Any member or reader knowing of a previous breeding of this species in Great Britain or Northern Ireland is requested to communicate at once with the Hon. Secretary.

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## COUNCIL MEETING

A Council Meeting was held on 10th November, 1954, in the Council Room, Zoological Society of London.

### OFFICERS FOR 1955

There were the following retirements and appointments :—

Council : Mr. G. T. Iles, Mr. R. C. Witting, and Mrs. G. T. Clark retired by seniority.

Mr. F. Grant, The Rev. J. R. Lowe, and Mr. E. N. T. Vane were elected to fill the vacancies.

Elected Hon. Life Member : Mr. W. Bamford.

### SOCIETY'S MEDAL

The Society's Medal was awarded to : Mr. D. Goodwin, for breeding the Lanceolated Jay (*Garrulus lanceolatus*).

ARTHUR A. PRESTWICH,  
Hon. Secretary.



## DARENTH-HULME, 1954

By KAY BONNER (Southgate, England)

The past breeding season has been very poor, in fact it is really remarkable how few young ones have been reared. It is fortunate therefore that, in spite of the atrocious weather, even including the near arctic conditions early in the year, the mortality has, for a comparatively large collection, been extraordinarily low.

It will perhaps be easiest to list the various aviaries and their inmates. The main range has housed the following :—

1. Stanley Parrakeets, a well-tried breeding pair produced only one good young one. Diamond Doves.
2. Queen Alexandra's Parrakeets laid, but did not hatch.
3. Stanley Parrakeets, and two cock Yellow-naped Whydahs.
4. Cockatiels produced one very undersized young one that died soon after leaving the nest. Fischer's Lovebirds, a small colony that just holds its own. One young one was hatched and reared by a pair of Budgerigars. A cock Peach-faced Lovebird.
5. Lineolated Parrakeets, the breeding colony has increased but to what extent is not known exactly.
6. Pennant's Parrakeets, the pair that reared four good ones last year, reared only two this season.
7. Abyssinian Lovebirds, the three pairs again failed to reproduce.
8. Golden-winged Parrakeets, the two pairs made no attempt to nest, not even inspecting nest-boxes.
9. Moustache Parrakeets, most dreadfully noisy and definitely not recommended to any aviculturist likely to suffer from neighbour trouble.
10. Cactus Conures and a single Weddell's Conure. Painted Quail.
11. Two pairs of Yellow-cheeked Conures, both nested unsuccessfully : another pair died during the arctic weather, feet badly frost-bitten.
12. Two pairs of Canary-winged Parrakeets occupied this aviary early in the season. This species has the reputation of being *very* quarrelsome, and this was confirmed by the fact that one of the quartet was severely maltreated and rescued only just in time to save its life.
13. Golden-mantled Rosellas reared one only.
14. Black-headed Conures reared one good young one. Cock Delamere's Whydah, a really handsome bird.
15. Barraband's Parrakeets, the cock went down with paralysed legs



early on, as a consequence the eggs were infertile ; he has now nearly recovered.

16. Crimson-winged Parrakeets.

17. Eight Red-bellied Conures occupied this aviary until one died early in the spring. As no attempts have been made to nest, we are wondering whether it might perhaps have been our breeding hen.

18. Eight Yellow-cheeked Conures at the beginning of the season ; one has died since. No breeding attempts, nest-boxes not even inspected.

The 7 ft. 6 in. wide flight stretching along the front of the main aviaries was stocked this year with two dozen Budgerigars of assorted colours ; and the breeding here has been very satisfactory indeed. The 72 ft. flight has enabled the young to develop into really fine, robust birds—very different to some of the control-bred, bird-room birds seen nowadays. For want of other accommodation two Jobi Island or White-breasted Ground Pigeons (*Gallicolumba jobiensis*) were put in this flight. Fortunately they proved to be a pair, and built a very slight nest, mainly of old millet sprays, precariously constructed on the top of a Budgerigar nest-box hanging under shelter in a corner of the flight. Not only did they hatch a young one, but they succeeded in rearing it in spite of the Budgerigars. At one time we were troubled by daily visits from a Sparrow-Hawk. On these occasions the Budgerigars panicked, and it was not uncommon to find a dozen or fifteen taking refuge with the pigeons on top of the nest-box. This young one is probably the first reared since Herbert Bright's first success when he reared two young ones in 1922.

The 10 ft. wide service passage and wilderness aviary at the rear of the aviaries contains two pairs of Crested Bronze-winged Pigeons, four Purple-headed Glossy Starlings, and a hen Amherst Pheasant. The cock bird was allowed to escape and, as it stayed in the district for a week or more, the daily papers were able to carry reports of a mystery bird seen in North London, with the usual, totally incorrect statement that " Zoo experts are puzzled " !

The large aviary containing the Red-faced Lovebird colony of twenty-eight remains just a colony. There has been considerable activity and much excavation, but as far as we know at present there has not been a single egg. There are also Chinese Painted Quail and breeding Diamond Doves.

The nine outside pens hold a miscellaneous assortment of Golden and Silver Pheasants, domestic Pigeons, Bantams, Java and Barbary Doves, Bronze-winged and Triangular-spotted Pigeons, and, most important, three Pied Imperial Fruit Pigeons. The latter, commonly known as Nutmeg Pigeons, are in perfect plumage, the white parts



being spotless, snowy white, so very different to the dull, cream-coloured birds sometimes seen in zoos. There is also a very tame Carrion Crow.

The White-bellied Caiques continue to occupy their own especial aviary. Although they pair frequently they never go further towards nesting than to sit on top of their nest-box.

Bird-room No. 1, at present houses a pair of Noble Macaws, three Canary-winged, one White-winged, one All-green, and eight Lineolated Parrakeets; one Rosella; two Senegal Parrots; two pairs of Emerald-spotted and two pairs of Blue-spotted Wood Doves, and three Peaceful Doves.

A second chalet-type bird-room has recently been completed, and now has as tenants a pair of Blue-crowned Conures, a Black-headed Caique, and four Bleeding-heart Pigeons.

The house Parrots still consist of a pair of Greys, three Senegals, a Brown-headed, and a Meyer's—originally believed to be Rüppell's.

Finally, at the London Zoological Gardens, we have three Nicobar Pigeons and five Green Imperial Fruit Pigeons which John Yealland is kindly keeping for us until next spring.

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## RECENT BREEDING RESULTS

By ALAN LENDON (Adelaide, S. Australia)

This article records the results achieved in my collection from the time of publication of my articles in the *AVICULTURAL MAGAZINE* (Vols. 55 and 56, 1949–50), until my cessation of avicultural activities after the 1952 breeding season.

Barraband's Parrakeet (*Polytelis swainsonii*).—The three young in the nest at the time of writing (November, 1948) were successfully reared, leaving the nest early in December. The same pair of birds reared five young in November, 1949, and the same number again in November, 1950. In 1951 the old cock died just as the clutch was hatching, but the hen successfully reared all four young single-handed, and they were perfect specimens when they left the nest in November.

For the 1952 season the same hen, one of my own breeding in 1946, was mated to a young wild-caught cock. He proved to be possessed of the nature of a Crimson-wing, and drove her mercilessly long before she was ready to nest, but she eventually hatched four young and reared three.

Rock Pebbler Parrakeet (*P. anthopeplus*).—The hen that successfully reared six young in 1948, died in September, 1949, and her mate died in September, 1950, just after a newly obtained hen had started



laying. This hen did not seem at all attractive to male Rock Peblers, as in 1951 she could not persuade either of two mates to feed her, and she laid two eggs, but did not incubate.

In 1952, although a fourth male, who had been most attentive when mated to a hen King, fed her occasionally, she laid three eggs, but again did not incubate.

Queen Alexandra's Parrakeet (*P. alexandrae*).—Three of the four young previously referred to were satisfactorily reared in January, 1949. In the 1949 season four young were reared in November from the first nest. Of the second clutch only one egg was fertile, but this was hatched and reared. In 1950 four young were reared from the first nest, but a second clutch was deserted. In 1951 three were hatched, and two reared from the first clutch, and two hatched and reared from a very large second clutch.

The old hen failed to moult satisfactorily before the 1952 season, and her first clutch of five were all infertile; she died after laying four more eggs. A second pair kept that year laid a clutch of six late in October; four proved fertile, three hatched, and two left the nest late in December, being very poor, undersized specimens.

King Parrakeet (*Aprosmictus scapularis*).—In 1949 the old pair did absolutely nothing, although the hen had raised my hopes by laying from the perch the previous season. For the 1950 season I changed the hen, but she got no further than visiting the log occasionally.

In 1951 I was fortunate to obtain the pair of birds that had bred regularly for Mr. H. Bradley, but the hen did nothing beyond lay two eggs on the ground in mid-November. In 1952, although I obtained their original massive log, they did not even lay, and a second pair did likewise.

Crimson-winged Parrakeet (*A. erythropterus*).—A new pair obtained in 1949 did nothing and began their moult in the first week of December. In 1950 this pair came into breeding condition in mid-September. The first egg of a clutch of three was laid in mid-October; all were fertile and had hatched in the first week of November, and although two died quite early, the survivor was reared and left the nest in the middle of December.

In 1951 the same pair had a clutch of four eggs early in November, and all had hatched by the end of the month; of these, three were reared, leaving the nest about the New Year. All three young, in addition to their father, died within a month!

For the 1952 season the same hen was mated to a new adult cock, and an egg was found on the ground in the middle of November; although this was placed in the log, three further eggs were not laid until the end of the same month. Of these all three were hatched and reared, the young birds leaving the nest towards the end of January, 1953.



Pileated Parrakeet (*Purpureicephalus spurius*).—In 1949, a clutch of seven was commenced on the last day of September, six were fertile, five were hatched, and four reared, leaving the nest in early December. In 1950, for some unexplained reason, no eggs were laid, but in 1951, although the first egg was laid from the perch in mid-October, six more were suitably placed and all were fertile and had hatched by mid-November. Of these five survived to leave the nest about Christmas time, but the smallest only lived a few days.

In 1952 the clutch of six was not commenced until the end of October, four out of six were hatched, and three left the nest late in December.

Crimson Rosella (*Platycercus elegans*).—This species was not represented in my collection in either 1949 or 1950, and a pair obtained before the 1951 season did nothing, as did another pair in 1952.

Adelaide Rosella (*P. adelaidæ*).—The pair that I had had for several years laid a clutch of six in the middle of September, 1949; four of these were fertile, but they were deserted when about due to hatch, and disappeared a couple of days later. A second clutch of four was laid early in November, and three dead young were found late that month. In 1950 the same pair had four eggs by the end of September, but had broken them a few days later, and several more eggs were subsequently laid and broken.

For the 1951 season I obtained a new hen, and she completed a clutch of six eggs, all of which were fertile, by 25th October. Three newly hatched young were observed on 17th November, and four days later there were three young living and one was dead; the two remaining eggs were given to a sitting pair of Western Rosellas, who hatched them, but allowed them to die. The three young Adelaides flourished and the first, a cock, left the nest on 20th December, and the other two, a pair, two days later. This constituted my first success with this species.

In 1952 the hen started to lay early in September, but the eggs were broken almost as soon as they appeared. I thereupon removed the log for a few weeks, and on replacing it, the next egg was laid about the middle of October, and promptly broken; five more followed and were incubated, but only one was fertile, so two Golden-mantled eggs were substituted for the clear ones. The young Adelaide hatched first and the two Golden-mantleds about a week later; the Adelaide died nearly a month after hatching, and the smaller Golden-mantled a week later, the other left the nest prematurely next day, and was obviously being neglected, so was given to a pair of Pale-headed Rosellas who were successful in rearing it.

Yellow Rosella (*P. flaveolus*).—The pair which reared two clutches in the previous season commenced a clutch of six eggs in the middle of October, 1949. These were all fertile and young were seen early in



November, and four were later counted ; these were all reared and left the nest between 11th and 22nd of December.

In 1950 a clutch of six was started early in October, five were fertile, and young were seen by the end of the month ; all of these were reared, and left the nest early in December.

In 1951 the clutch of five was started a little later in October, and all were hatched ; four were reared in early December, but one must have injured a wing, as it was never able to fly. The following year six fertile eggs were produced towards the end of October ; five were hatched and left the nest from mid-December onwards.

Green Rosella (*P. caledonicus*).—No results were obtained in either 1949 or 1950, but in 1951 the hen of the previous season was given a new mate, and she laid the first egg of a clutch of six on 3rd November. All proved fertile, and the first had hatched by 1st December, and four could be counted two days later. One of these died quite early, and two left the nest prematurely on 27th December, an extremely hot day, and were replaced. The first young bird did not leave finally until 8th January, and the other two followed two days later. All were successfully reared ; they were a cock and two hens, and this was my initial success with this infrequently bred species.

In 1952 the same pair laid a clutch of seven fertile eggs at exactly the same time of the year, all hatched and five survived, leaving the nest in mid-January.

Pale-headed Rosella (*P. adscitus*).—The pair which had reared two young the previous year, started the 1949 season with an infertile clutch, and only reared one out of three hatched in the second nest.

The following year the same hen, with a new mate, did not even lay. In 1951 I acquired a new pair which had been regular breeders for several years. They laid their first clutch of six late in August, hatched the lot, and reared five of them. The second round of five was laid in the middle of November, and were all reared by early January. Carrying on in 1952, the same pair reared four out of five hatched from their August clutch, and only one out of the two hatched from the November clutch, in addition to the Golden-mantled previously mentioned.

Northern Rosella (*P. venustus*).—In 1949 the pair that had been mated up the year before started with an infertile clutch in July, and followed with four more eggs in September, all of which were hatched and reared. This was the precursor of three remarkably successful seasons, for in 1950 they reared five young from the first clutch laid early in July, and five more from the end-of-September clutch. 1951 saw a very similar result, four being obtained from a clutch laid late in June and four more from a mid-September laying. For 1952 the results were three from the early clutch and a further four



from the later one ; thus the total works out at twenty-nine hatched and all reared from seven clutches in four seasons.

Eastern Rosella (*P. eximius*).—In 1949 the hen that had been successful in the previous year was mated to one of her sons. She laid a clutch of five eggs towards the end of October and incubated steadily, but all proved infertile. In August of the following year the son, having fallen in love with a Golden-mantled hen in a near-by aviary, proceeded to commit matricide, since when the common race has not been kept.

Golden-mantled Rosella (*P. splendidus*).—The cock which had bred in 1948 was mated to one of his daughters the following season, and although she laid three eggs in November, she did not incubate. In 1950 she was given an unrelated mate, and she started to lay early in October. Although most of the early eggs were broken, I removed eleven from the nest early in November ! Undeterred, she recommenced laying late in the month, and when I removed seven eggs at the end of December I was amazed to find one contained a chick on the point of hatching !

In 1951 the same pair had a clutch of six, laid late in September, of which three were hatched and reared. In 1952 bad habits were again in evidence, for many of the early eggs were broken, ten were removed in November, and two of these were hatched by Adelaides and one eventually reared with the help of the Pale-headed.

Western Rosella (*P. icterotis*).—No results were obtained either in 1949 or 1950 from the pair which had laid and hatched young in 1948. A new hen was obtained for 1951, and although she laid a clutch of five early in November, all the eggs were broken. She was given a new mate for 1952 and laid a clutch of six in mid-October ; three were fertile, but only one was hatched, and it promptly died. Three more infertile eggs were laid in November, and another two in December, which were not incubated. A second pair of immature birds laid five eggs early in November of that year, but did not incubate.

Red-rumped Parrakeet (*Psephotus haematonotus*).—This species was not kept in either 1949 or 1950. A pair obtained in 1951 had an infertile clutch of six early, then started non-stop laying early in October, and had a clutch of four in December, three of which were found to be fertile when deserted. In 1952 a different pair did nothing.

Many-coloured Parrakeet (*Ps. varius*).—Not kept in 1949 or in 1950. In 1951 a wild-caught hen mated to an aviary-bred cock did nothing, and a different pair obtained in 1952 were no improvement.

Red-vented Blue Bonnet Parrakeet (*Ps. haematorrhous*).—The old male did nothing with either of the mates provided in 1949 and 1950. A pair of young birds bred in my collection during the war were bought back, but they did nothing in either 1950 or in 1951, and both died in May, 1952.



Yellow-vented Blue Bonnet Parrakeet (*Ps. xanthorrhous*).—The old breeding cock was given a tame hand-reared hen as a mate in 1949, and she laid a clutch of six towards the end of August. Five were fertile and three were hatched and reared, leaving the nest at the end of October. In 1950 the same pair hatched three and reared two at the same time of the year, and in 1951 four were hatched and reared, again at exactly the same time. In 1952 the old cock failed to induce a new mate to lay, even though she spent some time in the log in November.

Little Blue Bonnet Parrakeet (*Ps. narethæ*).—The old breeding hen, with a new mate, had five clear eggs early in September, 1949. In 1950 the same pair had six eggs late in September; only one was fertile, but it was hatched and reared. In 1951 three were fertile out of four laid early in September, and two hatched and were reared. In 1952 a new hen was obtained, but she did not lay, although the cock seemed more vigorous than in previous seasons.

Hooded Parrakeet (*Psephotellus dissimilis*).—No results were obtained, although three different pairs were tried during the four years.

Bourke Grass Parrakeet (*Neophema bourki*).—In 1950 the first pair was the old cock with a new mate. They hatched and reared four in the first clutch, but only reared three out of five hatched in the second try. A second pair reared only three out of six hatched in their first attempt, then laid eleven eggs without incubating, and finally only reared two of six hatched at the third try. In 1951 the first pair only brought off two out of five hatched the first time, but reared all four that hatched in the second attempt. The second pair laid ten eggs, of which I left them seven, all of which they hatched and five of which they reared. The hen then laid a further ten eggs, of which I left her six, all of which hatched, but only three survived. In 1952 the results were not as good. The first pair started by hatching five and letting them all die, and followed with two hatched and reared. The other pair also let die all five that they hatched in the first nest, but reared four from eight hatched at the second attempt.

Blue-winged Grass Parrakeet (*N. chrysostoma*).—In 1950 the hen of the pair that had hatched young in the previous season broke a wing and did not lay. The other hen ran true to form, and again laid a number of eggs without incubating. In 1951 the profuse egg-layer was mated to the by then bereaved husband of the broken-winged hen; her first clutch of seven were laid in October, which is unusually early for this species, but all proved clear. Five out of a second lot of seven were fertile, only three hatched, and all died quite soon. The other cock of the previous year was given a new mate, and she had four hatched from five fertile eggs, but only succeeded in rearing two of them in mid-January. In 1952 this pair hatched all of four fertile eggs laid early in November, and had reared three by mid-December.



Elegant Grass Parrakeet (*N. elegans*).—The old breeding pair raised three out of three and one out of four hatched in 1950. In 1951 the first clutch was clear, only one was fertile in the second, and it was reared, and four Bourke eggs were substituted for an infertile third clutch, and two of four hatched were reared. For 1952 a new cock was obtained, and though the first clutch was again clear, two were reared from three hatched in a second try.

Rock Grass Parrakeet (*N. petrophila*).—In 1950 the old hen had a new mate, and she laid three eggs in October, hatched two of them, but allowed them to die when a fortnight old. The same pair had two clear eggs in 1951, and a new pair in 1952 did not lay, although the hen was in the log a great deal.

Orange-bellied Grass Parrakeet (*N. chrysogastra*).—In 1950 the hen became interested in the log early in December, and laid her first egg on the 30th of that month. The clutch consisted of four, which she incubated steadily, but unfortunately all were clear. Early in 1951 Sir Edward Hallstrom was kind enough to let me have a new cock to replace the old one, known to have been in captivity since 1938 ! This year the hen was seen in the nest, and feeding was observed late in December. On 4th January the cock was dead, and three days later the hen laid an egg ! However, she did not incubate, but produced another egg early in February. Early in 1952 I was lucky enough to obtain yet another cock, the best specimen that I have ever possessed, but unfortunately the hen died in September. The only pair that I know of in captivity nowadays is at the Adelaide Zoo, and though the hen lays and incubates most years the eggs have always been clear.

Turquoise Grass Parrakeet (*N. pulchella*).—In 1950 one pair did not lay ; the other pair did not sit on the first clutch, and reared the only one hatched in the second. The following year this latter pair again did not sit on the first clutch, the second were all clear, and the third again were not incubated. A new hen provided for the cock of the other pair had an infertile first clutch, and reared only one of the three hatched in the second. In 1952 a single pair laid eleven eggs late in the season, but did not sit.

Scarlet-chested Grass Parrakeet (*N. splendida*).—Recent results with this usually easy species were appalling. In 1950 a very fine cock had two eggs laid by his first mate, and they promptly vanished ; he was then given another hen who hatched three and four in successive clutches, but reared none of them. Another cock had an early clutch of seven from this hen, and when mated with the other did no more. In 1951 both hens broke their eggs, and one ultimately died egg-bound, and in 1952 one pair did not lay while the hen of a second pair also died egg-bound, and a new hen then hatched two young and they promptly died.

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## LONDON ZOO NOTES

By J. YEALLAND

A very attractive little collection of birds, a present from Sq./Ldr. K. C. Searle, was brought back from Singapore by Head Keeper Akhurst of the Aquarium.

It consisted of a Blue-rumped Parrot (*Psittinus cyanurus*), a Long-tailed Parrakeet (*Psittacula longicauda*), the most beautiful of the genus; six Blue-crowned Hanging Parrakeets (*Loriculus galgulus*), and two Malayan Yellow-breasted Sunbirds (*Leptocoma jugularis microleuca*), new to the collection.

Other presentations include a Gannet (*Sula bassana*), a Yellow-casque Hornbill (*Ceratogymna elata*), and two Red-eared Bulbuls (*Otocompsa emeria*).

Two Abyssinian Ground Hornbills (*Bucorvus abyssinicus*), two of the handsome Goliath Herons (*Ardea goliath*), and two Black Pies or Piapiacs (*Ptilostomus afer*) have been purchased. It used to be thought that red-billed specimens of this Pie were females, but it is now known that only immature birds have red bills. On arrival from the Gambia it was found that one of the Ground Hornbills had some of the common African ticks, *Rhipicephalus sanguineus*, on its head.

Twelve young Budgerigars of the Woburn homing strain have been sent from Whipsnade and a few young ones have left the nests in the new aviary. Two more Crested Pigeons have been bred; also a Bronze-wing, five Quaker Parrakeets, three Masked Lovebirds (blue-bred green), a Rosy-faced Lovebird, two Lesser Black-backed Gulls, a Herring Gull, and two Night Herons.

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## BRITISH AVICULTURISTS' CLUB

The forty-fourth meeting of the Club was held at the Rembrandt Hotel, Thurloe Place, South Kensington, S.W. 7, on Wednesday, 10th November, 1954, following a dinner at 7 p.m.

Chairman: Miss E. Maud Knobel.

Members of the Club: Miss P. Barclay-Smith, Miss K. Bonner, Mrs. V. M. Bourne, W. Brain, Captain A. Clarence, G. T. Clark, Mrs. G. T. Clark, W. D. Cummings, O. E. Dunmore, Miss S. A. Fothergill, F. Grant, H. J. Harman, Miss S. I. Hobday, H. J. Indge, G. T. Iles, P. H. Maxwell, Miss E. G. Perry, S. Porter, A. A. Prestwich, J. H. Reay, D. M. Reid-Henry, D. H. S. Risdon, R. C. J. Sawyer, P. Scott, E. N. T. Vane, N. S. Walker, H. Wilmot, J. Yealland.

Guests: J. Bailey, B. R. Cordwell, S. A. Croucher, Mrs. S. A. Croucher, Miss H. Gentry, Mrs. F. Grant, Miss S. Indge, H. M. Luther, Miss J. O'Connor, Mrs. J. H. Reay, Miss M. White, Mrs. H. Wilmot, W. A. Woods.



Members of the Club, 29 ; guests, 13 ; total, 42.

Peter Scott gave a brief review of some vanishing birds, California Condor, Whooping Crane, Hawaiian Goose, etc. He suggested the Society might use its influence in any attempt to persuade the conservation societies concerned to allow responsible breeders opportunities for increasing the numbers by breeding in captivity. D. M. Reid-Henry and Frank Grant took part in the discussion that followed.

The programme for the rest of the evening was confined to a conversazione.

The next meeting of the Club is on **12th January, 1955.**

ARTHUR A. PRESTWICH,  
*Hon. Secretary.*

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## NEWS AND VIEWS

W. G. Teagle reports that the Pink-footed Goose hatched on the Long Water, Kensington Gardens, is now more than three months old.

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The Ueno Zoo Park, Tokyo, has been successful in hatching one Manchurian Crane and two White-necked Cranes in an incubator.

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The Convention of the American Pheasant Society was held on 5th, 6th, and 7th September, 1954, at Madison, Wisconsin. The Master Breeder's Award was given to our member Robert Gibson, of St. Helena, California.

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The Bronze Medal of the Avicultural Society of South Australia has been awarded to F. E. Welford, for breeding the Golden-breasted Bunting ; to A. Phillips, Black-backed Wren, and to E. Baxter, Black-tailed Finch.

\* \* \*

T. R. Holmes Watkins reports : " After a bad start four pairs of Splendids reared twenty-three very fine young (the same number as last year) ; two more were slightly rickety and were destroyed. Otherwise only Crimson-winged, Pennant's, and Princess of Wales's Parrakeets were bred—King, Pileated, and Brown's all failing."

\* \* \*

Jendaya Conure—Major V. Dilwyn Jones has three strong young ones flying. Purple-capped Lory—Tom Spence has a young one, one



hundred days old. Pennant's Parrakeet—two reared at Dudley Zoo. Guiana Parrotlet—D. F. Castle, "two youngsters about three weeks old." Noble Macaw—E. N. T. Vane, three reared. Abyssinian Lovebird—Captain A. Clarence, two ready to leave the nest.

\* \* \*

The deaths of several interesting birds have been recorded. San Diego Zoo : A Frazar's Oyster-catcher after more than twenty-three years in captivity, having been brought to the Zoo in July, 1930. Basle Zoo : A Condor that arrived 20th April, 1900. Whipsnade Zoo : P. H. Maxwell's Pesquet's Parrot, after over two years, possibly a longevity record for this very rare and difficult species.

\* \* \*

Mrs. Ferne Hubbell, San Diego, writes : "I thought you might be interested to know that we crossed a male Pileated and a female Blue (Mealy) Rosella, and have three lovely birds that look like the Pileated. Also this year we reared two baby Finsch's Parrots ; they were eight weeks coming out of the nest—they are really beautiful.

Since 1950 we have reared nine Scarlet (Red and Yellow) Macaws from one pair."

\* \* \*

The more discriminating aviculturists eagerly look forward to W. J. C. Frost's return from collecting trips to Malaya and New Guinea. The most recent collection consisted of the following : 1 Westermann's and 1 One-wattled Cassowary, 1 Palm Cockatoo, 1 Salawati King Parrakeet, 1 Narcissus Flycatcher, 5 Black-chinned Laughing Thrushes, 15 Painted Quail, 1 Plicated Hornbill, 3 Nicobar Pigeons ; 20 various Birds of Paradise, comprising Lesser, Twelve-wired, King, Hunstein's Magnificent, and Wilson's.

Frost has just left on yet another expedition.

A. A. P.

\* \* \*

## NOTES

### CORRIGENDUM

Vol. 60, No. 5, September–October number, 1954, page 186 : for "Masked White" Zebra Finch read "Marked White" Zebra Finch.

### BANANAS AS A FOOD FOR BIRDS

In the tropics the banana is the chief food given to many caged fruit-eaters. Some of the smaller sorts thrive solely on banana. There are many very fine and also many inferior varieties of this fruit. The latter are very indigestible even when fully ripened. The finer sorts do not last long enough to reach our shores, as the period of edibility lasts for but a day or two. It is these sorts on which tropical birds thrive best. Even the larger parrots will not thrive on inferior kinds yet I have known of a Macaw to thrive on sound banana as its chief food.



The banana of commerce is of a more lasting nature than some of the fancy kinds, keeping as it does for several days in an edible state. Nevertheless not until it is thoroughly ripe is it safe for many birds. Under-ripe it causes colic, frequently followed by deaths. Over-ripe it causes looseness, being then of no value.

Greenish-yellow bananas, whether with or without dark patches on the skin are unwholesome food for the smaller birds, and for that matter the larger parrots. A good test is that the skin peels off easily, neither breaking nor leaving any of it adhering to the fruit. Should any skin adhere to the fruit it should not be fed, as it is still undigestible in such a state. A thoroughly ripened banana has a golden yellow skin covered sparsely with light brown spots.

NEIL MACLEOD.

\* \* \*

## CORRESPONDENCE

### THE USE OF NECTAR IN FEEDING BIRDS

I was very intrigued by the article and illustration of the Golden-fronted Woodpecker partaking of nectar food by J. Carpentier of the Antwerp Zoo.

Whilst I have not had experience of this particular species, the fact that it is a fruit-eating bird explains why it has taken the nectar, mainly, I think, because the sweetness compares with fruit juices. Old-standing members of the Avicultural Society and foreign bird enthusiasts will know me in the trade as specializing, over the last thirty-five years or so in Tanagers, Manakins, Fruitsuckers, and all the nectar-eating species, and will know that I have always advised feeding fruit-eating birds with sponge-cake or brown bread moistened with nectar, in addition to fruit. I have always fed so and I am certain that it must have saved me many thousands of pounds in preventing losses in fresh consignments.

Tanagers and Sugar Birds are generally packed with banana, which I consider a bad food. I find that fresh arrivals after taking the sponge-cake or bread, which they do straight away, will seldom touch banana again and my sole method for these birds is to give only orange in the way of fruit and for the Sugar Birds a jar of nectar.

I have never tried Tanagers with nectar itself, but no doubt they would drink it; I like the cake and bread for roughage. I have, however, on occasions given pots of nectar to the larger birds arriving in very poor condition. I recently received some Greater Himalayan Barbets in very poor condition and in addition to the food mentioned above I gave a 2 oz. jar of nectar to each bird. They consumed two jars each day, and in a week, unless seen, one would never believe the difference in the condition. At the moment I have a female Cock-of-the-Rock which drinks about 2 oz. each day and a Red-crested Manakin which takes a similar amount.

I give nectar to all my stock, for finches and softbills I add it to the drinking water; my food, however, differs from that used by Mr. Carpentier. Many years ago I cut out honey, condensed milk, and prepared invalid foods as they all turn sour overnight; I use only Dextrine-Maltose ingredients which even in hot weather will not turn sour in 24 hours. My birds, from Humming Birds to Cock-of-the-Rock, do excellently on it. I trust these few notes will be of interest to our members.

P. H. HASTINGS.

182 SULTAN ROAD,  
LANDPORT, PORTSMOUTH.

In his article (Sept.-Oct., 1954, issue) on "Woodpeckers in Captivity", Mr. J. Carpentier seeks information on the use of nectar for birds other than those for which this preparation is normally provided.

This is a very intriguing subject, because when feeding Sugar Birds on this diet I always have on hand each day a surplus which is placed before my Superb Tanager, Golden-fronted Fruitsucker, and Black-headed Sibia. As these three birds proved extremely partial to this liquid food I gave a little to my Scarlet Tanager who likewise displayed a marked liking for it.



As a result of these experiments, which I carried out some time ago and from which the above-mentioned birds derived much benefit, I decided to put about half a teacupful in the main aviary to discover whether any other birds in my very mixed collection would be attracted by it. Imagine my surprise and delight when I found that not only did my Blue-throated Barbet and Indian Mynah regard it as a special treat but that they had to reckon with competition from Bulbuls, Pekin Robins, Ground Thrushes, Dyal Birds, and many kinds of seed-eating Finches. My pair of tiny Grey Singers, for example, drank it eagerly as did also Orange-cheeked Waxbills, Zebra Finches, and Tri-coloured Mannikins.

I have little doubt that, especially as a final evening feed in cold weather, nectar is a valuable supplementary diet for many birds for which it has, perhaps, been considered unsuitable. It is, I am sure, a very nourishing medium for any bird that can be induced to take it.

There are, we all know, many varieties of nectar preparations based on the general principle of honey, Swiss milk, and baby food. In respect of choice of components I have found that much depends upon the individual bird. One Blue Honey Creeper I have will not touch his mixture if a meat extract has been added. Nor have I found it desirable, except about once a week, to make use of any of the infant foods. I have a notion that too frequent use of them tends to produce fatness, particularly when birds (as not infrequently happens) are confined in cages where exercise is necessarily somewhat limited.

The whole question of bird nutrition, it seems to me, is one that should be studied very carefully, not merely in relation to species, but specifically (and this is of cardinal importance) to birds as individuals.

C. R. PODMORE.

49 GREYSTONES GRANGE ROAD,  
ECCLESALL,  
SHEFFIELD 11.

I was interested to read Monsieur Carpentier's article on the Golden-fronted Woodpecker living in the Antwerp Zoo.

I recently bought a Cuban Black-browed Woodpecker (*Melanerpes superciliaris*) and I find that it, too, is fond of the liquid Sunbird food. It also eats grapes, apple, and occasionally a little minced raw beef, but will not touch insectile mixture or mealworms, though these are offered daily. So far the bird is thriving; it is very active and calls a good deal, but it never pecks at the tree trunk in its aviary. Unlike the Antwerp bird, my Woodpecker is very aggressive towards other birds and an unfortunate White-eye that got into the aviary was quickly killed.

I have not been able to discover anything about the natural food of the Black-browed Woodpecker, but Gosse, writing about the Radiolated Woodpecker of Jamaica, says that it eats various fruits as well as wood-boring larvae and ants. It also damages the stalks of sugar cane and sucks out the juice, so I wonder whether any of the Cuban birds have similar tastes.

Like Monsieur Carpentier, I have found that other birds will also drink the Sunbird food and I believe it is good for them, especially the newly-imported small birds.

R. C. J. SAWYER.

226 HAGGERSTON ROAD,  
LONDON, E. 8.

#### SUCCESSFUL BREEDING OF JENDAYA $\times$ BLACK-HEADED CONURES

These two birds which were owned by Mr. Rouwenhorst, of the Kroonstad district, nested in a very ordinary box approximately 10 inches square and some 22 inches high. Eggs laid, as far as knowledge serves, numbered three. First indication of any chicks was when about two-three weeks old; this was on Saturday, 20th February, 1954, when both my good friend Mr. Rough and myself inspected them at the request of the owner. They were then very well developed but still covered with grey down and showing hardly any feather.



These three chicks left the nest about four weeks ago (18th May, 1954). In all appearances they are very healthy birds and the characteristics of both parents can be seen. So far it is difficult to do any sexing as they are so very much alike but there appears to be two and one. The one carrying more yellow colouring about the head. However, all show yellow feathering amongst the head which, like the Black-headed Conure, is all black. Wings similar to the same—black beaks and black feet, all show yellowing on breast and abdomen.

The three chicks were acquired by me on 15th May, 1954, and the parents by Mr. Rough. The three chicks are now fully feathered and independent of their parents.

A. R. CARTHEW.

Box 49,  
VEREENIGING, S.A.

#### OXPECKERS

Whilst judging at a bird show at Southall in October of this year I was surprised to find among the exhibits two Oxpeckers or Tick Birds (*Buphagus africanus africanus*). If my memory is correct this is the first occasion that they have been exhibited alive here\* and I do not recollect having ever seen them represented at the London Zoological Gardens. They were quiet when examined and in good health and plumage. Sitting partly upright on their perch they peered at one curiously. Their strong feet which enables them to clamber about the hides of herbivorous animals seemed fitted more for this purpose than perching, although they perch on trees and on native cattle-sheds. They were entered as "Blood Birds", not altogether an unsuitable name. Ornithologists at one time differed as to what they actually ate. It seems, however, that not only are ticks eaten in quantity but stomach examinations include *diptera*, lice blood, tissue, and hair. Animals in bad condition with open saddle and gall wounds have such afflicted parts kept open by the birds pecking at flesh and sipping the blood. Much information on the habits of these curious birds has been contributed by Mr. Moreau and Major Cheeseman and others and quoted.

ALLEN SILVER.

LLANTARNAM,  
MON.

\* Mr. H. Witley owned living specimens previous to 1939.

#### MEMORIAL TO THE DUKE OF BEDFORD

On behalf of the Committee of the Duke of Bedford Memorial Fund, I write to say how gratifying the response, particularly from members of the Avicultural Society, has been.

Photographs of the aviary, the plaque, and the Memorial Trophy will be published in the AVICULTURAL MAGAZINE in due course, together with a final statement of the total amount of the Fund.

It is hoped that the present Duke will perform the ceremony of unveiling the plaque early next spring, and when the date is announced, donors wishing to attend the ceremony will be invited to communicate with me.

R. C. J. SAWYER,  
Honorary Treasurer.

226 HAGGERSTON ROAD,  
LONDON, E. 8.



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## LIST OF EXCHANGES AND PRESENTATIONS

Members are reminded that the publications presented or received in exchange are deposited in the Library of the Zoological Society of London, Regent's Park, London, N.W. 1.

- Great Britain . *Bird Study, British Birds, Cage Birds, The Ibis, Our Zoo News.*
- Australia . *Australian Aviculture.*
- Belgium . *Le Gerfaut, Le Monde Avicole, Natuurwereld, Ornithologie, Zoo.*
- Denmark . *Dansk Ornithologisk Forenings Tidskrift, Stuekultur.*
- France . *L'Oiseau, La Terre et la Vie.*
- Germany . *Die Gefiederte Welt, Die Vogelwarte, Die Vogelwelt, Ornithologische Abhandlungen, Ornithologische Berichte, Ornithologische Mitteilungen.*
- India . *The Indian Aviculturist.*
- Italy . *Lo Sport Colombofilo Napoletano.*
- Netherlands . *Ardea, Onze Vogels.*
- South Africa . *The Bokmakierie, The Ostrich, S.A. Feathered World.*
- Sweden . *Vår Fågelvärld.*
- Switzerland . *Der Ornithologische Beobachter.*
- U.S.A. . *America's First Zoo, Animal Kingdom, The Auk, The Condor, The Pheasant Fanciers', Gamebreeders' and Aviculturist's Gazette, The Wilson Bulletin, Zoologica.*



## CANDIDATES FOR ELECTION

- A. BERKOUWER, Eendenkooi, Bakkerswaal, Lekkerkerk, Holland. Proposed by G. de Goederen.
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# THE AVICULTURAL MAGAZINE

BEING THE JOURNAL OF THE  
AVICULTURAL SOCIETY AND  
THE AVICULTURAL SOCIETY OF  
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EDITED BY  
PHYLLIS BARCLAY-SMITH, F.Z.S.

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# AVICULTURAL MAGAZINE

THE JOURNAL OF THE AVICULTURAL SOCIETY  
AND THE AVICULTURAL SOCIETY OF AMERICA

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JANUARY-FEBRUARY, 1955

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## EAST AFRICAN BROWN-HEADED PARROT

(*Poicephalus cryptoxanthus*)

A. A. PRESTWICH (Southgate, England)

The East African Brown-headed Parrot was first described and named *Pionus fuscicapillus* by Verreaux and Des Murs in 1849. And *fuscicapillus* it remained until 1924 when Dr. Hartert called attention to the fact that "the African Parrot now called *Poicephalus fuscicapillus* (*Pionus fuscicapillus* Verr. et Des Murs, 1849) cannot be called by this name, because of *Pionus fuscicapillus* Wagler, 1832, which is a new name for *Psittacus spadiocephalus* Kuhl, 1820, and refers apparently to a female of a *Geoffroyus*, but it is not possible to say which form".

The next available name for the species, *Poicephalus cryptoxanthus* Peters, 1854, was duly adopted.

The range of this parrot is quite extensive—the East African coastal region from Mombasa to northern Mozambique, Zanzibar Island, and Southern Nyasaland south to the Transvaal and Natal. Bowen (1930, 1932) examined a number of skins and was struck by the difference, both in size and colouring, between specimens from the mainland and from Zanzibar. He writes: "not only are the mainland and island birds subspecifically distinct, but the mainland specimens are themselves divisible into a northern and a southern race."

The three geographical forms recognized are :—

*P. cryptoxanthus tanganyikae* Bowen,

*P. c. zanzibaricus* Bowen,

*P. c. cryptoxanthus* (Peters).

During the past ninety years there has been a number of references to this parrot in the *Ibis*—by Kirk (1864), Ayres (1887), Finn (1893), Swynnerton (1907, 1908), Sclater (1911), Vaughan (1930), Vincent (1934), Fuggles-Couchman (1939), and several others. The authors do not, however, throw much light on its habits in the wild state,



merely stating with monotonous uniformity that it is usually found in small flocks or in pairs, is swift of flight, its harsh cries can be heard at a considerable distance, it feeds on fruit, such as figs, etc., that the natives say it does much damage to their millet and maize, and that it nests in holes in decayed trees, the eggs being white and nearly round—all of which could, of course, apply to many of the psittacine species. But there is really little else the field observer or collector can record. Paget-Wilkes (1928) does, however, describe the finding of two nests, and writes that one “containing two young birds newly hatched was found on 6 June, 1924, not far from the first. The entrance-hole was facing downwards on the horizontal branch of a dead tree, and a large twig  $4 \times \frac{1}{2}$  in. had been taken into the hole by the birds for some unknown purpose. The young birds were thirty-six inches down the hole, and uttered a continuous rasping alarm-note as the wood was cut away with a hammer and chisel. They were covered with grey down except for the head and bill, which were white.”

Although apparently quite a common bird in the wild only very few seem to have been brought alive to England. Dr. (later Sir) John Kirk presented two to the London Zoo, 7th May, 1870: and one was in Herbert Whitley's world-famous collection at Primley in 1929. The only other *recorded* example, owned by Miss Kay Bonner, is the subject of the present coloured plate. This bird, so ably painted by David Reid-Henry, was obtained in 1947 from a well-known London dealer who insisted that it was a Quaker Parrakeet—readily identified, he said, by reason of its grey head!

The former specific name *fuscicapillus* refers to the dusky colour of the head; the vernacular brown-headed is hardly a fair description, the colour of the head and neck really being olivaceous greyish-brown: *cryptoxanthus*, concealed yellow, refers to the under wing-coverts.

This species, like all the members of the genus, thrives on the usual seed mixture, supplemented by pea nuts, fruit, carrot, green peas, cabbage stalk, etc.

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## STUDIES ON GREAT CRESTED GREBES

By K. E. L. SIMMONS (Tilehurst, Reading, England)

Illustrated by Robert Gillmor

## 1. INTRODUCTORY AND SOME GENERAL ASPECTS

*A good glass, a note book, some patience, and a spare fortnight in the spring—with these I not only managed to discover many unknown facts about the Crested Grebe, but also had one of the pleasantest of holidays. "Go thou and do likewise."*

Julian Huxley, 1914 : 492.

In the spring of 1948, having those simple requirements listed by Dr. Huxley, I followed his advice with no more ambition than a hope to see some of the fantastic displays of the Great Crested Grebe (*Podiceps cristatus*), so ably and intricately detailed by him long ago. The experience both interested me and stimulated me to try and learn more. Since then, and in spite of strong counter-attractions from other species and bird topics (for I have always been something of an ornithological butterfly), the grebe has firmly remained my favourite bird, one whose life-history, though so well explored in some avenues, has many ill-lit lanes worth illuminating.

The present series will outline some aspects of grebe biology that I have studied, presented against a background of modern research especially into behaviour. It represents not the final report, but a pause for stock-taking along the line. This first, introductory section is concerned not always so much with observations of a strictly original nature but with some general aspects, as I see them, to set the scene.

Why does a person spend much of an all too meagre leisure seriously watching grebes or any other bird species, wild or captive, for that matter? There can be no general answer to this question for much depends on the nature of the individual himself. Besides genuine scientific interests, which we proud keen amateurs firmly believe we have, there must be other more personal reasons and rewards to ease what might well become in time a tedious task. For me, a certain leaning towards the sensational and the unknown in my bird-watching is catered for by grebe work. Above all Great Crested Grebes are spectacular birds. Not only are they themselves conspicuous and striking but much of their behaviour is involved and elaborate, especially the multiform displays. In studying grebes, I have derived considerable pleasure and, let it be admitted, self-satisfaction in discovering new facts and forming new theories about the behaviour of a species already well covered in the literature. Then there are subtler attractions hard to explain clearly. When in a suitable mood, I sometimes find that the setting in which I am watching my grebes makes my day not just mentally interesting but full of an unreasoned enjoyment



too. How relaxing it is, for instance, in lethargic August to laze on the grass bank of the pool in the warm sun, observing the domestic routine of a grebe family and the comings and goings of neighbouring species. The mood changed, I am invigorated by those blustering winter days when the grey waters swirl at the bank and the hunting grebe is lost to sight in the troughs of the waves. For better or worse, some of us tend to lose that early simple joy in bird-watching that once was ours, because of an unremittingly serious approach to our study. I believe that an occasional return to that former frame of mind leavens the present sterner work.

Great Crested Grebes are almost ideally suited for general study. Locally common, they have a long reproductive-cycle (which may be investigated for ten months of the year) with a fascinating, almost totally unanalysed set of elaborate displays. These last pose many intriguing and challenging problems as does the whole question of the species' intimate integration with its aquatic habitat. Large and conspicuous too, grebes are usually indifferent to the unobtrusive observer on the bank. The resulting relative ease of watching Great Cresteds is never so forcibly brought home to me than when I occasionally attempt to observe the quite shy and elusive Dabchick or Little Grebe (*Podiceps ruficollis*) which is not common locally. I come away thankful that I chose its bigger, tamer cousin for my main work. However, others have succeeded and important field accounts of Dabchick behaviour are to be found in the papers of Huxley (1919) and Hartley (1937), while some fascinating and overlooked fragments on display are given by Lorenz (1935), who kept two in captivity.

One serious drawback in studying the Great Crested Grebe is that it is practically impossible to catch and mark. Such marking would enable us to study intimately individuals of known age and status, and would tell us much of what needs to be discovered—at what age grebes first nest, the effect of age and experience on territorial behaviour, and so on.

With their dagger-like bills and slim necks, dark crown-crest, white underparts and almost tailless bodies, adult Great Crested Grebes are distinctive birds at all times of the year. In flight, during some displays and when the birds stretch and flap on the water, the pure white wing-patch shows up conspicuously. In their so-called summer or breeding plumage (which may be assumed in mid-winter!), both male and female develop the long chestnut, black-fringed "tippits" on the side of the head. From these frills the species gets its former, conveniently short and attractive name Tippet Grebe which is in some ways a better one than that in current use. Also, it completes a trilogy, for the modern trend is to revert to older names for both the Slavonian and Black-necked Grebes (*Podiceps auritus* and *caspicus*) and to call them Horned and Eared Grebe respectively.





Great Crested Grebe and Black-throated Diver (*Gavia arctica*) in breeding plumage, showing some of the external differences between the two groups.

The grebes are quite primitive birds possibly fairly closely related to the divers. These replace them in more northern latitudes. Grebes resemble divers in several details of structure, including the position of the legs far back on the body, and in their general way of life. On the other hand, they differ from them in a variety of characters including their lobed (not webbed) feet, relatively longer and slimmer necks and bills, head ornamentation and the pattern and texture of the plumage; their larger clutch size, unspotted eggs, striped young, and manner of courtship; the kind of feather-lice and tapeworms which infest them. Because of these many differences, the two groups are now usually separated as distinct Orders, the PODICIPITIFORMES (grebes) and the GAVIIFORMES (divers). The similarities are usually attributed to convergence and not to any close relationship. However, both apparently are the direct descendents of the prehistoric, Eocene grebe/diver *Colymboides* of some 40–60 million years ago. To-day the strange Western Grebe (*Æchmophorus occidentalis*), which James Fisher tells me seems the N. American (ecological) counterpart of the Great Crested, is probably the connecting link between the two groups. Structurally and in most of its behaviour a grebe, *Æchmophorus* has unstriped chicks (see Plate 3 in Bent, 1919) and a distinctly diver-like display, as those who saw Walt Disney's colour-film "*Water Birds*" will recall. This particular display is a fantastic, upright mutual dash over the water with only the birds' rears submerged.

My studies on Great Crested Grebes have been centred at Burghfield gravel-pit, near Reading (Berkshire), which is just over two miles from my home and within easy reach of my motor-scooter. Since 1948 the grebe summer population at this flooded pit has increased from about nine pairs to a maximum of eighteen pairs in 1954. During this period, the total water surface has more than doubled from about 60 to 130 acres, while two small adjoining pools of some two acres each have been colonized by single pairs. Other breeding waterfowl at Burghfield include several pairs of Coot (*Fulica atra*), and a few Moorhens (*Gallinula chloropus*) and Mute Swans (*Cygnus olor*). Dabchicks turn up now and then in early spring and winter but seldom stay long, the



Great Cresteds driving them off if the opportunity comes. The latter have no regular avian fish-competitors to contend with—Heron (*Ardea cinerea*) do not visit the pits frequently and Cormorants (*Phalacrocorax carbo*) less often still, while the two commonest species of wintering diving-duck, the Pochard and Tufted Duck (*Aythya ferina* and *fuligula*), take fish but occasionally and only very small ones at that. Fishermen frequent the gravel-pit in some numbers in season, and, like the grebes, do their fishing near the bank. Of the two, the grebe seems the more efficient piscatorian. The arch-enemy of the Great Crested, the large pike (*Esox*), is present in fair numbers and takes its toll of young. On average, less than one grebe chick a pair reaches the flying stage and the pike is probably mainly responsible, as pointed out by Tucker (1934). An intriguing problem that needs tackling is the question of how much good fishermen do for the grebe by reducing the stock of full-grown carnivorous pike. The bird's own food supply would not be affected directly by the human catching of fish over about six inches in size.

#### *The Development of our Knowledge of the Great Crested Grebe*

Serious work on the grebe is a twentieth-century affair. Over forty years ago Huxley, then an undergraduate, spent his spring vacation at the Tring Reservoirs in Hertfordshire watching the bird. The result was a classic pioneer paper remarkably in advance of its time and still to be read with considerable profit to-day. In it Huxley described in detail, recorded the circumstances of performance, and named all the major courtship displays of the species. Much less completely, he outlined the true sexual behaviour at the nest, usefully summarizing the long, diary observations of Selous (1901), the father of grebe watching. Further papers followed, by Selous in 1920–21 and Huxley in 1924. The last work was based on the observations of several watchers at Oxford, and can lay claims to be one of the first of those co-operative studies which have become such a feature of British ornithology. In 1932 and 1936 came the reports of Harrison and Hollom on their inquiries into population trends in the United Kingdom (except Northern Ireland) and into general biology. These were based on the joint observations of many members of the recently formed British Trust for Ornithology. In a very useful paper, Tucker (1934) expanded the information obtained for Berkshire, Oxfordshire, and Buckinghamshire. Since the earlier studies of Huxley and Selous, individual watchers, with one exception, seem to have left Great Crested Grebe behaviour alone, perhaps because of the apparent completeness of the first work. In 1934 and 1936, however, Venables and Lack published two papers on territorial behaviour which Venables had investigated over five breeding-seasons—the first really long-term study on the grebe by a single observer. Useful summaries of our



pre-war knowledge of grebe biology are given in the *Handbook of British Birds* (vol. 4). Recently there has been a revival in grebe watching. Hanzák (1952) in Czechoslovakia has written a long account in English, dealing mainly with ecology, though there are some interesting remarks on behaviour. My own observations are now nearly in their eighth year, with one published paper (Simmons, 1954). At Oxford, which may truly be considered the centre of past grebe research, L. McCarton of the Edward Grey Institute has started a short-term study on the ecology and breeding biology. The latter subject especially deserves attention, for it is still one of the less well-known topics of grebe life-history. Meanwhile since 1946 a further census of the grebe population of a sample area (of some twenty counties in England) has been organized annually for the B.T.O. by P. A. D. Hollom and an interim report issued (1951). The ten-year run of this inquiry ends in 1955.

### *Some Characteristics and Problems of Grebe Behaviour and Biology*

#### *The Grebe as a Waterbird*

The world of a Great Crested Grebe is essentially an aquatic one and the bird's structure, general habits, and behaviour have all been adapted for and influenced by it. Really no birds, apart from other grebe species, are more aquatic, for even the penguins breed on a solid surface, albeit ice, and walk easily on it. Grebes on the other hand very rarely come to land and can only progress clumsily. In a grebe versus penguin argument, however, it must be admitted that whereas penguins spend much time in the open sea far away from land, grebes usually stay very close to it. This is not due to any tie with terra firma but to the grebes' shallow-water feeding habits.

Great Crested Grebes spend most of their life on or below the water. They not only get most of their food under the surface but also often prefer an underwater route from point to point. They fight and start some of their courtship displays too from the deep, which is also their escape lane. For this submarine existence the powerful keeled propelling legs with lobed feet lie far back on the body so that they can give maximum thrust. The body itself, with the relatively small wings (not used in swimming) and long neck, is well streamlined and waterproof. The white under-feathers, the "grebe-fur" of commerce, come into closest continual contact with the water and are therefore very dense. All the contour feathers are well oiled, especially the thick underpad which shows up conspicuously as the bird rolls over in the water and strops it with the bill. In fact, grebes spend a great deal of their time in preening with a liberal employment of the oil-gland on the base of the back.



The whole of the breeding-biology is related to this aquatic existence. A few points may be mentioned briefly here. The nest is sited in or near the water, sometimes even floating in it. Wet materials are used in its construction and many brought up from underwater. As a protection against damp, the eggs have a chalky surface. The covering-over with weed of the nest-stained eggs, by the adult grebe, guards against aerial predators (crows, harriers) which could easily spot unhidden white eggs in the exposed situations where grebes build. Lastly, the small young are carried on their parents' backs as a foil to the underwater attacks of the pike.

To a species so intimately linked with the water ice is a serious menace, especially if the shallower parts near the bank, where the grebe gets most of its food, are affected. Unlike surface-feeding ducks, which can rest on the frozen layer and get some food away on land, grebes have no local answer to serious icing-over and must move off to larger, clearer lakes or to the sea. In the south of England especially, grebes regularly winter inland, but usually sooner or later have to migrate in very cold spells, soon returning when the thaw comes. This normal tendency to move out in bad weather probably helped the grebe in the terrible winter of 1946-47 when other aquatic birds, notably the Heron, suffered more severe losses.

### *The Role of the Sexes*

The life of Great Crested Grebes is one of true sex equality. As with many species in which male and female are identically plumaged, the two sexes play an almost equal part in the various reproductive activities. The differences that exist, apart from the absolute functions of fertilization and egg-production, are mainly slight ones of degree. Evolution has brought about a two-way equality of the sexes more extreme than in many other animals, man not excepted, for in humans the term "sex-equality" mainly indicates the acquisition of masculine social privileges by the female. Not only has the male grebe acquired many female attributes but the female has many masculine ones. Thus, it is often very difficult for us to sex a grebe on its behaviour. For example, both sexes have similar roles in courtship, search for nest-sites, and help to build. Both defend the territory, solicit copulation with identical postures, incubate, carry the small chicks, and feed the young. However, the male is the one that usually mounts in coition and is more aggressive in dealing with intruders, while the female has a special call and posture (advertising behaviour) when unpaired and desiring a mate, or when out of contact with her partner. This advertising may assist males to recognize the opposite sex but they can probably do this in any case by sight. Even we undiscerning humans can usually tell a female grebe by her slightly smaller proportions, especially of the head ornaments. For instance, the female of one





The heads of a particular pair of Grebes (male left, female right). The differences between the sexes are not always so marked as in this case.

grebe pair, A52, that I knew well (having watched the two birds for, on average, six hours a day right through their month-long incubation period), differed from her husband by much the same facial characters that we associate with human females. She was much more delicately moulded and had a nice angle between bill and forehead that the male, with his unenviable "droop-snoot", lacked.

#### *Courtship.*

The social life of the Great Crested Grebe is one of marked formality and few species spend more time in display. Their elaborate and multiform courtship displays are outstanding features. As would be expected, full use is made of the display plumage: tippits and crest.



A pair of Grebes finishing a bout of head-shaking. This display is the most common form of courtship.



The chief courtship display, the mutual head-shaking as male and female face each other with elongated necks, may be seen regularly from grebe couples from late December (weather permitting) until early November. Indeed the display of few other species can be seen so often and with as little trouble. Head-shaking, like the other courtship activities, is not directly concerned with coition, which takes place after distinct *pre-copulatory* displays on the nest. Because of this Huxley termed the courtship-displays "self-exhausting" ones, functioning to keep male and female firmly together through the arduous joint task of rearing the brood. As I hope to show in a later section, the problem goes deeper than this, head-shaking, at least, probably being also a sexual appeasing display, functioning directly to inhibit hostile reactions in the mate.

#### *The Question of Age.*

Do Great Crested Grebes breed in their first season after birth or later? We just do not know and a correct answer would help a lot in the understanding of some of the many problems of grebe life. Unfortunately, the first year birds cannot be distinguished from older ones. If only they retained some traces of their juvenile characters when they have moulted into first winter and then first summer plumage, there would be no puzzle.

On many waters each year there is a varying proportion of apparently non-breeding pairs which idle away a good deal of their time in courtship, but never seem to progress far past that stage. It is reasonable to think that at least some of these are young birds incapable of breeding. This would imply that, while first-year grebes may pair-up and display like young geese and penguins do, they do not actually breed until their second year. However, at least one reason may favour a different opinion. As Hollom (1951) shows, in the breeding-season immediately after the severe winter of early 1947, the grebe population in those counties covered by his sample census went down by about 300 birds but had recovered fully by 1948. On the other side of the picture, in the case of the Heron, in which species the young birds definitely do not breed until their second year, a similar recovery after the blows of that hard winter did not take place until 1949 (Alexander, 1949, 1950), a year later than the grebes. This suggests that at least some Great Cresteds (those mated to older birds?) do, unlike young Herons, breed in their first year.

I believe that age and relative experience affect the behaviour of grebes appreciably. There are noticeable individual differences in the intensity and persistence of hostile behaviour, for instance, as several writers have stressed. My most consistently aggressive birds are those occupying the traditional territories in a certain pool very suitable for nesting. The whole bearing of these grebes, together with the fact that



they may establish themselves early in the year, indicate that they are old-stagers.

### *Some Aspects of Population*

The grebe population of England, Scotland, and Wales is undoubtedly higher now than ever it has been. Commercial slaughter (for the sake of ladies' hats) had reduced it to about forty pairs in 1860. Protective legislation, for once in time, saved the species so that by 1931, when a careful co-operative census was made, numbers had gone up by over 3,000 per cent. Judging from the sample counts, numbers have since increased still further. It seems likely though that the upper limits of population are now being reached, for the rate of increase has levelled off appreciably. The most marked rise in numbers since 1931 has taken place in the Thames Valley region mainly (an increase



Large carnivorous Pike like this one may take a large proportion of small Grebe chicks.

of over 20 per cent) while in the Midlands and further north the population has gone down somewhat. In the south-east, the increase has been helped by a host of new, artificial lakes in the form of flooded gravel-pits. Were it not for these new waters, we might very well have witnessed a marked overall decline, as has happened on parts of the Continent. However, I think another factor besides the godsend of fresh suitable waters may have helped to further the good day of the grebe. These recently available sites are at first free of the bird's worst foe, predacious pike. Until the numbers and, more important, the size of these fish increase, the toll on the young will be very much reduced. Related to this there is a tendency for grebes to forsake long colonized waters. It seems quite likely that such desertion is at least partly effected by too great a predation by large pike. There is an



urgent need for actual figures of brood survival from both old and new waters to test this supposed relationship between bird and fish. In any case, I am not suggesting that the pike is the only controlling factor of the grebe population. There is the food supply (which includes small pike !) to be considered among many other aspects.

### *Habitat Requirements*

The Great Crested Grebe will not live on any pool and the small pond which accommodates a pair of Dabchicks and some Moorhens will not suit the larger bird. It usually breeds on more extensive fresh-water lakes, gravel-pits, meres, flashes, and the like which must generally be at least five acres in extent to hold any grebes at all. Occupied waters of three to four acres are considered exceptional, though locally a couple of small pits of some two acres each have been colonized recently (one pair of grebes on each) and young successfully reared there. As Tucker (1934) points out, however, it is uncertain if such waters are capable of supporting a breeding pair indefinitely. To be really suitable, all grebe pools must be shallow enough in places for the birds to fish in. A depth of between five and ten feet seems best for this. These waters must have sufficient cover too to house the nests. Locally, flooded clumps of willow (*Salix*) and great reed-mace (*Typha*) as well as trailing willow branches fill this role mainly, while patches of giant reed (*Phragmites*) also serve.

I think that grebes are often first attracted to a water by its size, staying if the feeding is satisfactory. Only when they get into breeding condition do they start to look around for suitable nesting sites. If the place lacks such cover, those pairs that really want to nest must leave and search elsewhere. Other, less intense and probably younger pairs will often remain where they can get plenty of food but cannot breed, going through the summer in the early phases of reproductive behaviour. This seems the set-up on most of the large London reservoirs.

### *The Annual Cycle*

In August and September some grebes, including most of the surviving independent young of the year (the stripe-heads), start to move away from their summer haunts. Very probably some of the adults involved are relatively young ones, for those older birds in the traditional territories generally remain. With the onset of colder weather, however, further birds leave the smaller inland waters, especially more northerly ones, and move to the larger reservoirs or to inshore salt water. Some pools, especially in the south of England, are seldom deserted entirely in winter unless iced over. Many of those grebes thus forced away often return soon after conditions improve though they may be banished again by further cold spells. Some waters are thus occupied early in the year, weather permitting, and



breeding may begin in March if the vegetation is sufficiently grown-up to anchor the nest, as it always is at the Burghfield pits. Elsewhere, if the cover is unsuitable, the first eggs are postponed until May and June. As laying goes on into July and August and even occasionally into September, the breeding-season is most protracted for a species not generally double-brooded. The breeding-season of many other species is usually far more restricted because sufficient food for the young is only available for a comparatively limited period (Lack, 1950). Natural selection has not favoured such a limitation in the grebe and has "allowed" the breeding season on any one water to be largely determined by the state of the littoral growth. This suggests that food for the chicks is more or less abundant during six months of the year.

Locally at the Burghfield pits, the annual cycle of events proceeds something like this. If the weather is mild the grebes that are already paired may start courting in late December, select a nest-site and defend a territory. Building and true sexual behaviour follows. Other unpaired birds are meanwhile finding partners and courting. Usually this early reproductive behaviour is interrupted, disrupted, and generally disorganized by bad weather which may even send the birds away. However, the population builds up during the next few months, birds arriving singly or in pairs. Nesting is usually well under way by late March and early April with the very first young appearing in the middle of the latter month. Birds arriving later nest in May and June. In these months the early birds may sometimes undertake second broods though often they have to replace lost eggs and chicks. The late birds themselves are doing this in July and August. Hence some stripe-heads may still be begging for food from their parents in October and even early November. The population tends to go down gradually through emigration during these two months until any very bad spell dismisses all the grebes.

For the sake of the descriptions and discussions on aspects of reproductive behaviour which will come in later sections, it is necessary now to give a formal list of the various patterns which follow one another in time sequence and which make up the reproductive cycle. This will be useful for reference.

- |                      |   |                            |
|----------------------|---|----------------------------|
| Pre-parental stages. | { 1. Initial courtship display (including pair-formation).<br>{ 2. Building (including site-selection).<br>{ 3. Soliciting.<br>{ 4. Copulation. | } Platform<br>} behaviour. |
| Parental stages.     | { 5. Incubation.<br>{ 6. Tending the young.   |                            |

*(To be continued)*



## BREEDING OF THE PURPLE-CAPPED LORY

*(Domicella domicella)*

By TOM SPENCE (Newburgh, Fife, Scotland)

The Purple-capped Lory is perhaps the most beautiful of all birds although its form may be too stocky and its colours too gaudy for some tastes. Since few have been imported in recent years and some readers may not be familiar with the species, a description seems in place. This lory comes from the Indonesian islands of Ceram and Amboina. It is pigeon-sized and about the build of the better known Yellow-backed Lory, *Domicella garrula flavopalliata*. It differs in its more massive bill and the longer erectile neck feathers. The general body colour is more deeply crimson than that of the Yellow-back, but lacks the purplish tint of the Black-capped Lory. This crimson is deeper and darker on the mantle while the upper surface of the tail-tip is deep ox-blood colour and a fluorescent orange, shot red, below. A variable yellow crescent spans the crop region : the extent of this may be related to age for this patch has greatly decreased in my birds and is now scarcely to be discerned in the ♀ ; she in turn developed two small purple patches on the outer horns of the crescent, recalling the similar ornamentation in Gould's Lory, *D. chlorocercus*. The cap is black but its distal third is of a variable purple, washed and streaky in some, in others a deep imperial tint. The wings are of brilliant iridescent green, free of any olive tinge ; the leading edge of the wing, the lesser under coverts and the thighs are light blue washed with a paler shade in some, while the inner webs of the secondaries and the inner primaries are bright yellow. The bill is deep orange, the cere dark grey, the iris dark greyish brown with a faint light grey inner ring in the ♀ and a more brilliant light ring in the ♂. The plumage is identical in both sexes but the more massive head of the ♂ makes sexing easy.

My pair were imported for me under licence by Mr. Frost and along with three other individuals appear to be the only specimens brought to Britain for many years. The birds were not united for many months and during this period the female became exceedingly tame and quite fantastically attached to me, caressing me, grooming my eyelashes with her papillated tongue and regurgitating food into my mouth or ears quite promiscuously. After some premonitory pumping she would seize the commissure and, pulling my mouth round towards the shoulder she sat on, regurgitate macerated banana and condensed milk into me. Indeed I even developed a taste for this strange pabulum for I felt her too sensitive a creature to offend by spitting out her gift ! The male too became very, very tame and when he moulted into adult plumage and the pair were brought together the two would sit, one on



each shoulder, fondling my ears and murmuring love-words to me or as often deafening me with their incontinent shrieking.

This state of psittacine felicity was not to last long, however, for the two had more or less the liberty of the farm office and one day, after being called away, I returned to find them making confetti of a small fortune in National Insurance stamps. When I seized the male somewhat roughly to return him to his cage, he bit me savagely and has sought to do so ever since. Thereafter, though his liberty was not curbed I always armed myself before I dared address him. When they were breeding, entry into the flight was a real hazard though, when the male was shut in the shelter, the female was as loving as ever.

Purple-caps seem to be the most tolerant of the lories with regard to feeding. Mine have, in the morning, a condensed milk/honey nectar into which is broken white or malt bread, or occasionally sponge cake. This nectar is less dilute than that for my other lories and is reinforced with halibut liver oil, wheat germ oil, the whole B complex, B<sub>12</sub>, liver extract, red bone marrow extract, and the like from time to time. The evening nectar is a dilute honey mixture with vitamin C added. They drink but little of this, but they are great fruit eaters with banana as the staple. While rearing they were given egg custard of which they are inordinately fond and consumed the equivalent of one egg in two days.

While still caged the ♀ laid several clutches of eggs before the pair were united. When I first felt the brood-patch preparing, and could palpate the developing egg in her abdomen my concern for her was as unbounded as any primiparous father! Apart from a single egg all other clutches were of two. The first egg to be laid after introducing the male was eaten by him; the second egg was promptly removed when laid and a china pigeon egg substituted. This seemed to convince him, for his behaviour since has been beyond reproach. She incubated her early clutches, six in all I recall, in a pie-dish half-filled with peat litter. Of course they were all infertile.

The pair was turned out in early June into a small aviary with a cosy refuge in a quiet part of the garden sheltered by yew hedges and walls from disturbance. In the rare sunshine of the time their constant play was a delight of brilliant colours; much of this was conducted hanging from the roof of the flight where their wing-flapping showed the great yellow wing patch to advantage. The nest-box was attached in the shelter and was investigated immediately, the pair roosting in it the first night.

The first egg was laid on the 23rd June, and the second on the 25th. She did not begin to incubate till the second egg and even then seemed to be but little inclined for the first few days, coming off to play with the male at any opportunity. I admit to taking ridiculous liberties with this pair for I examined the eggs almost daily, taking them out to



wash them and test for fertility, even floating them (albeit in water of carefully controlled temperature) to observe with delight the bobbings and early stirrings of life in them. The first egg starred and chipped on the 24th day and hatched within four hours of chipping. The second egg hatched on the 26th day. I believe this was due to careless incubation in the early days when she seemed to be happy with only one egg under her. The hen did all the brooding, keeping up a constant begging call during the later stages. Her brooding position was of interest; the phalanges were clenched and raised while she rested on the angle of the flexed tibiotarsal-tarsometatarsal joint.

The young were invested with long soft, almost white, down on the back and humeral region. This was soon lost, probably through contamination with regurgitated food. When about three weeks old the dark second down follicles and the red true feather follicles showed through the skin and by the fourth week the chick was covered in a dense dark grey short down with a whitish pattern on the neck and shoulders recalling a game-chick. About this time the eyes opened and the egg-tooth was shed. The first feathers showed through on the flanks about the 60th day and the young bird left the nest on the 95th day after a few days timid peeping out. It began to feed itself soon after.

The first juvenile plumage resembles that of the parents but is dingier and duller. The purple of the nape is deeper in this individual and more extensive than in its parents, while the yellow chest patch is widespread and diffuse. The feathers of the mantle differ in having dull green bases to their red tips, while the tail has a faint bluish tip with the two central feathers drawn out like a pintailed snipe. The greatest difference is in the under wing-coverts, the posterior row of which is black tipped and not wholly blue as in the adult. It seems likely that all juvenile lorries of the genus *Domicella* exhibit this character. The young bird's bill remained black till it was about four months old when it gradually assumed an orange colour.

As may be seen, only one young bird survived. At last the parents began to resent my constant interference and chopped off some toes. The more mutilated of the two I removed and attempted to rear from the age of three weeks. All went well till I gave it some banana when mercifully it soon died, for I fear the task of rearing it would have been beyond my patience and leisure. The survivor is intact but for one missing phalanx. This must be an exceptionally tolerant pair of lorries for they have now hatched a second clutch, indoors, with their first young one still beside them, unmolested.

Although this species has been bred in Belgium by Bruyneel and in the U.S. by Mrs. Bonestell, there appears to be no record of previous success in Britain. That this success should fall to me must be one of



the most fortunate chances of beginner's luck, for not only did I acquire my first lories little more than a year ago but I have never bred any species of psittacine before, not even a budgerigar !

*Postscriptum*

The second clutch alluded to above did not hatch successfully. At the time of writing both eggs had chipped but the young birds did not succeed in breaking from the egg-shell, so dried-up had they become. One chick had died before I had realized the trouble and the other was adhering to the shell membranes. The umbilicus was dried up with a piece of shell attached to it that I was unable to remove. It seemed unlikely to survive but I returned it to the nest-box. It did pull round and is now four weeks old and just beginning to sprout its dark grey down. The first young one thrives but is a rather timid unfriendly creature.

\* \* \*

As described above, T. Spence has bred the Purple-capped Lory (*Domicella domicella*). It is believed that this may be a first success.

Any member or reader knowing of a previous breeding of this species in Great Britain or Northern Ireland is requested to communicate at once with the Hon. Secretary.

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## MY BIRDS IN NORMANDY AND IN CALIFORNIA DURING 1954

By JEAN DELACOUR (Los Angeles, California, U.S.A.)

I was at Clères in May and June. In spite of the poor weather the park looked lovely to me after a two-years' absence. I am glad to say that, thanks to Mr. F. E. Fook's efficiency and devotion, it is an unqualified success as a show place. Visitors are extremely numerous, increasing in numbers each year. This makes possible not only a high standard of upkeep, as in the past, but also a good deal of improvements. The collection is now quite good again. When I think of other country places familiar to me in France, in England, and elsewhere, which have either disappeared or deteriorated so much since the last war, I congratulate myself to have transformed Clères from a home with private collections into a public park enjoyed by hundreds of thousands each year. In the present circumstances, it was the only way to maintain the grounds and the collections of birds, park animals, and plants.

Several notable improvements have been brought in during the last two years. The most important has been the building of very practical breeding quarters. They consist of a double row of eleven pens on either side of a central concrete building. Each compartment includes



an inside shelter, well lighted and aerated, 7 ft. by 3 ft., an open aviary twice as large, with a concrete floor, and a long, grassy run 40 feet long; the whole structure is covered with  $\frac{1}{2}$ -in. mesh wire netting and entirely vermin-proof. The indoor pens can be used for either broody hens or electric brooders. The results have been excellent. Mr. Fooks found that young pheasants did better if kept on the concrete floor until fully grown. The grassy pens, therefore, are used mostly for young geese and other large waterfowl during the first three weeks of their life.

When one considers that bird breeding is now rather a secondary activity at Clères, it is gratifying to report that the following species have been reared in 1954: 1 Black-necked Swan; 3 Cereopsis; 4 Emperor, 7 Greater Snow, 1 Blue Snow, 2 Magellan, 8 Ashy-headed, 9 Blue-winged, 5 Egyptian Geese; 1 South African, 3 Common Sheld-Ducks; a number of ducks, such as Pintails, Chilean Teal, Chiloe Wigeon, American Black and Philippine Mallards, Chestnut-breasted Teal, Shovelers, Mandarins, Carolinas, and various Pochards; 13 Black-shouldered, 2 Common, 3 Pied, and 17 hybrid *Spicifer*  $\times$  Common Peafowls; Barbary and Chukar Partridges; 1 Impeyan Monal; 2 Temminck's Tragopans; 2 Lineated, 5 Blue Eared, 12 Horsefield's, 18 Amherst's, 8 Black-throated, and 6 Common Golden, 3 White Crested Kalege, Swinhoe's, and 8 Mikado Pheasants; also several Red Junglefowl and Wild Turkeys; a number of doves, including Wonga-wongas, Bronze-wings, Bar-shouldered, Peruvian, Mourning, and Grayson's; a Green Cardinal; Fischer's and Masked Lovebirds, and other parrakeets. The collection of birds at Clères is improving continually. Rheas and Ocellated Turkeys, presented by the San Diego Zoo, pairs of Hyacinth and Lear's Macaws, several rare species of waterfowl from the Severn Trust, Leckford, the United States, and Australia, in particular, have arrived lately.

My aviaries at Los Angeles continue to give me much pleasure. In this privileged climate all tropical birds can be kept outdoors and bred all the year round. So far this season there are sixteen young Gouldians (from 3 pairs), 21 Parson Finches (from 1 pair), 8 Long-tailed, 1 Star (*ruficauda*) Grassfinches; 14 Diamond Sparrows, 3 Golden-breasted Waxbills; 1 Blue Tanager; 1 Mountain Witch, 4 Chiriqui, 5 Martinique Ruddy Ground Pigeons, 2 Green-winged, 6 Peruvian, 5 Diamond, and 4 Silver Diamond Doves; 3 Painted Quail; 6 Mandarin Ducks, and over 40 Pied Budgerigars (from 3 pairs), one male being yellow and cobalt, with a blue cere, a most unusual specimen. It appears to be the first time that Chiriqui (*Geotrygon chiriquensis*) and Martinique (*G. martinica*) Ground Pigeons have bred in North America or Europe.

Many additions have been made to the collection, particularly a pair of Nicobar Pigeons, an Imperial Fruit Pigeon reared by Mr. M. Strann; Cuban Trogons; a Japanese Ouzel (*M. cardis*); several Sugar-



birds ; Red-rumped Waxbills ; a Blue-throated Barbet ; a Hardwicke's Chloropsis ; Moustache (*mystacea*), Ruddy (*montana*), Grey-headed (*caniceps*) Ground Pigeons ; Blue-headed Pigeons ; Philippine Long-tailed Doves ; Germain's Peacock-Pheasants. The Dove collection is now particularly good, and rare young birds should be reared next year. It was disappointing that the pair of Bourke's Parrakeets did not nest and that the Hawaiian Ducks only laid two infertile eggs. Also Bartlett's Bleeding-heart Pigeons, which had reared young last year, only dropped a few eggs this past season.

In the aviary close to the house, which contains a mixture of many finches and doves, a Shama, a Japanese Ouzel, a Golden-fronted Fruit-sucker, Painted Quails, Cuban Trogons, etc., I was astonished to find seven Yellow-winged Sugar-birds instead of five, three males and two females, which I had put there last year. Two are evidently young birds, but I had never been aware that a pair had successfully nested in such inadequate conditions ! There had been a lot of pursuit and quarrelling among the Sugar-birds during the summer, but I failed to detect a nest among the thick vegetation of the aviary. Besides fruit, eggs and cake, and some chopped meat, Sugar-birds eat finely cut-up cheese. I never give any mealworms to my birds. Therefore the young Sugar-birds have been mostly reared on fruit, egg, and cheese, and whatever flies and other insects the parents could catch.

A few pairs of ducks (Carolinas and Red-billed Whistling Ducks) were liberated in the garden and did very well, but the damage they caused to water plants obliged me to remove them. I have now a few Flamingoes and Trumpeters. Ring-neck Doves and California Quails were also liberated, but they disappeared after some time.

Chinese Tigrine Doves are very numerous in Los Angeles gardens where they have become very well established. The native Mourning Dove is also abundant.

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## WHITE-CRESTED JAY-THRUSHES

(*Garrulax leucolophus*)

By D. H. S. RISDON (Dudley, Worcs, England)

These bold, cheerful birds are great favourites of mine. I can thoroughly recommend them to anyone who wants a softbilled bird which is hardy, attractively coloured without being gaudy, easy to feed, and has most amusing ways. White-crested Jay-Thrushes are birds of character. They quickly learn to recognize their owner, and greet his arrival with peals of maniacal laughter reminiscent of the voice of the Kookaburra. Admittedly, they can be somewhat deafening indoors, but echoing cheerfully across a garden from an outdoor aviary, their voices are delightful.



For those who don't know this bird it is somewhat smaller than a Common Jay in size. It has a tail of average length and a cone-shaped white crest which is normally carried erect, but can be depressed at will. The wings are rounded and short, and the flight rather weak. The beak is straight and pointed; the legs and feet are strong and well developed. In fact the Jay-Thrush's favourite method of progression is by long hops whether on the ground or from branch to branch.

The colour scheme is brown, white, and black. This does not sound very exciting, but actually is most attractive. The throat and head, including the crest, are snow white, slightly darker at the nape. The beak is jet black, and there is a black streak running from the beak to well behind the eye. The rest of the plumage is olive-brown, with chestnut shading on the upper breast just below where the white ends.

The bird has a bold, swaggering demeanour, and is ever on the move, poking and prying into everything, and taking an intelligent interest in all that is going on.

The sexes are alike, but in the pair I have at present, which I am pretty certain from their behaviour are a true pair, one, I think the hen, has eyes of a lighter shade of brown than the other.

A mated pair of these birds show great affection for one another. They are never far apart and seem to enjoy doing everything together. They always call simultaneously and stimulate each other into greater efforts as they pour forth their cackling laughter with wide open beaks, their whole bodies quivering with their efforts.

They enjoy feeding, drinking, and bathing together, and invariably sleep tucked up close to one another side by side. They also have an amusing habit of preening each other's feathers, assuming the most idiotic expressions whilst this is being done.

My pair were certainly the star turns of my garden aviary this summer, and I have had many a laugh at their antics. When they first arrived they were in very rough importation plumage, and I never expected them to attempt breeding, but once I was watching them foraging about among the undergrowth in their aviary when one picked up a twig, held it in its beak for a moment, and then passed it to the other. The significance of this act obviously struck their minds at the same moment, for they burst into shrieks of laughter as if the whole idea were just too absurd for words!

A good point in their favour is that they do not skulk—even in a large aviary. They are always on show and look remarkably conspicuous in spite of their lack of brilliant colours.

In a large aviary I have found them quite harmless with birds as small as Cardinals. Admittedly there was plenty of room for other birds to get away from them, but never once did I see them chase or



attempt to molest any other bird in the aviary. I would not, however, recommend that they be associated with anything weaker than themselves in small enclosures or cages. They have strong claws and beaks and could do serious harm to a weaker companion. Whilst pairs adore each other, birds of the same sex fight savagely, and I have known one nearly scalp another when confined in the same cage.

White-crested Jay-Thrushes are quite hardy and in my experience will winter outdoors in an unheated aviary provided with a decent shelter. I think they come from fairly high up in the Himalayan mountains, so probably are used to a temperate climate.

They do well on a medium grade insectile mixture as provided for thrushes and starlings, and like plenty of fruit, particularly orange, apple, and pear. They will, of course, eat all kinds of insects, and I give mine 6–10 mealworms per bird daily. These birds are great bathers, and should have an opportunity to indulge in this every day. They do equally well in aviaries or large cages. One has occupied a cage in the Bird House at Dudley Zoo for several years.

For some reason they are not often entered at shows. Why is difficult to understand, as a pair in good condition would make a most attractive exhibit. I suppose the reason is that they have to compete with species which are rarer and more difficult to keep in condition which doesn't give them a fair chance of winning on their own merits.

I know nothing of their breeding habits, but I understand that they make a cup-shaped nest in thick vegetation, and if any young hatched, unlimited supplies of live insects would almost certainly be required if they were to be reared successfully.

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## ANTING

By DEREK GOODWIN (Virginia Water, Surrey, England)

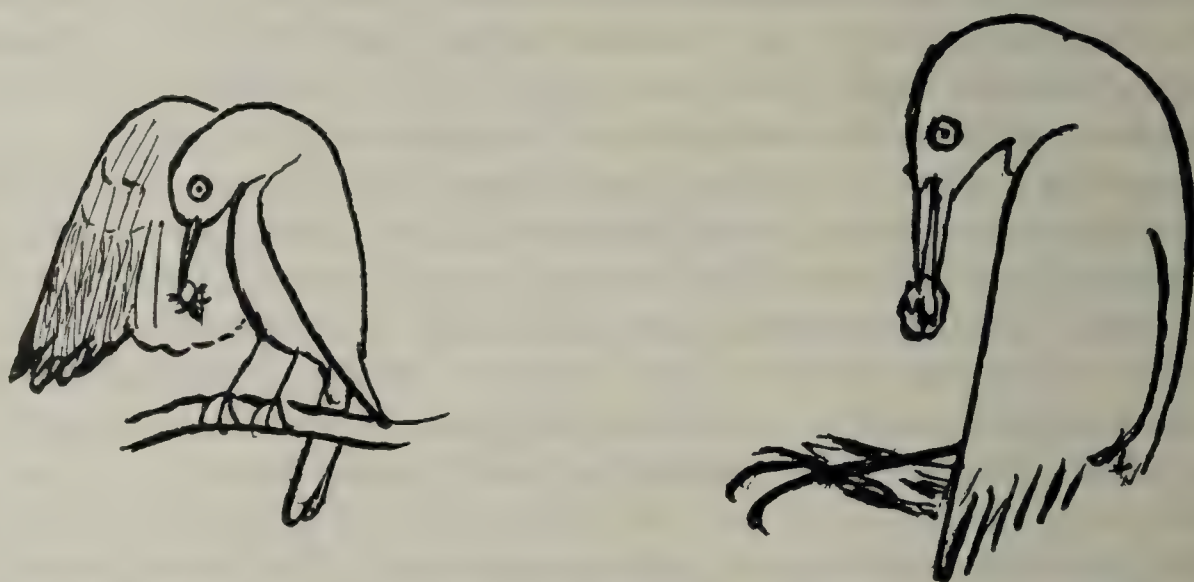
Although much has been written on this habit of passerine birds, I have met several aviculturists who were unaware of it, and never gave their birds opportunity to indulge it. And there is the less excuse for this, seeing that some of the most important observations on anting have been made by an aviculturist, Mr. H. R. Ivor, who has contributed to our MAGAZINE.

This habit of deliberately applying ants to their plumage is confined—so far as we know—to the passerines. Among them it is very widespread, and may perhaps be universal. The few records of other groups of birds anting require confirmation, those relating to game-birds are certainly due to the actions of individuals dust-bathing in ant heaps being misinterpreted. Most birds use worker ants (which contain a good deal of formic acid) for this activity, but there are



records of various other materials, usually of an apparently irritant nature such as tobacco ash, lighted cigarettes, mothballs, small limes, and various insects, being used.

The anting movements are both remarkable and stereotyped. In the form used by most species (of the relatively few whose anting has been carefully observed) the bird picks up one or more ants in its



Typical anting postures of small passerines (Mesia and Starling).

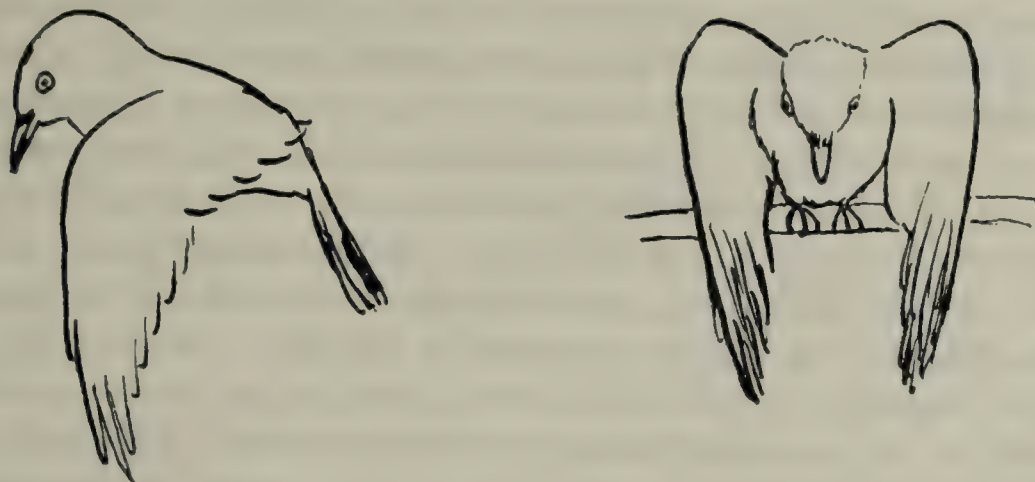
bill, and with a brisk stroking movement rubs them down the underside of its primaries. While so doing one wing is brought forward and held away from the body. The tail is usually brought forward, often to such a degree that it comes between the bird's legs. Indeed, if the bird is anting on the ground, it often trips up over its own tail, and falls backwards or sideways. Some species discard the ants, others eat them after use. Some use one ant at a time, others like our Starlings (*Sturnus vulgaris*) pick up a second ant without dropping the one first used until they have a large ball of crushed ants held in the bill. In some species the ants may be applied to the tail, rump, or ventral regions,



Two anting postures of Rook, on ground.



as well as to the underside of the wing-quills. Some foreign birds—such as the troupials (*Icterus sp.*) and Beechey's Jay (*Cissolopha beecheyi*), show great caution when approaching the ants, and carry the insect they pick up a little way from the mass of ants. Perhaps in the wild, such species use soldier ants or other species that could damage the bird if it hopped down among them, as many of our native species do when anting.



Carrion Crow in anting postures on perch, after having anted on ground.

In addition to the typical anting movements described above, the Crow (*Corvus corone*) and the Rook (*C. frugilegus*) also flop prone on to the ground with wings outspread, as if they had lost the use of their legs and were vainly trying to rise. Obviously this will serve to let many of the ants swarm into the plumage of their own accord.

The Jay (*Garrulus glandarius*), Red-billed Blue Magpie (*Urocissa erythrorhyncha*), and Green Magpie (*Cissa chinensis*), use rather different



Jay in characteristic anting posture.



movements. Both wings are thrust forward at once, the primaries brushing the ground, and (at high intensity) almost fully spread, so that they form a tent around and in front of the bird. This bringing forward of the wings is accompanied by a shuddering movement. The tail movements are the same as in other birds. These three species do not pick up ants in the bill when anting, although at a little distance they appear to do so as they make similar head-movements to other birds. They even make incipient movements of picking up ants, but the bill is always empty, as it is stroked along the underside of the primaries. They do, however, often pick an odd ant off their legs or plumage and throw it away whilst anting is in progress. The Azure-winged Magpie (*Cyanopica cyaneus*) shows an intermediate form. It picks up the ants in its bill in the usual way, but uses the same wing movements as the Jay and the Green and Blue Magpies.

The possible biological use of anting has been the cause of much speculation, and as yet no satisfactory definite answer can be given. My own opinion is that it is most likely to be of some use in the destruction or discouragement of ecto-parasites. It seems possible that the formic acid from the ants might render them more easily removed by the bathing and vigorous preening which usually follow anting. It has been suggested, and recently announced as a proved fact by some leading ornithologists, that the anting movements come about solely through the bird attempting to remove formic acid from its face by wiping it off on to the wing and tail quills. That it is in fact nothing more than a necessary precaution or "first aid" when the bird is feeding upon ants. To me this appears very wide of the mark. Admittedly the contact with formic acid may be the immediate stimulus that elicits the anting movements in hitherto inexperienced birds, or even perhaps in experienced ones. It is even conceivable that this behaviour might have evolved from such acid-removing by birds eating ants. But the following facts seem to me to prove that it is no longer—if it ever was—a mere by-product of feeding behaviour.

Many birds that ant eagerly do not eat the worker ants, but discard them after use, some, as we have seen, do not even pick them up when anting. When any irritating substance gets on (? or near) its eye, a passerine bird immediately turns its head and rubs the eye on its shoulder. This is not an anting movement (it is shown in identical form by birds that do not ant, such as pigeons and game-birds), yet it will be made (as an interruption) during anting if the bird gets some formic acid in its eye, as often happens. Whereas captive insectivorous birds are nearly always eager for live insects, including winged male and female ants and ant pupae, it may be weeks before they are eager to ant again after having indulged. When not in an "anting mood" they will come down among a pile of ants in order to pick out the winged reproductive forms and pupae, but endeavour to avoid the



workers. At such times they show the typical "eye wiping" if they get squirted in the face with formic acid, but never show the anting movements. Nor, of course, do the many game-birds and woodpeckers that eat worker ants freely show anting movements when feeding.

Aviculturists are in a good position to try to solve some of the problems connected with anting. But even those who have neither time nor inclination to concern themselves with experimentation in the matter can, and should, give their birds the opportunity to indulge in this habit. All that is needed is to put a few spadefuls of wood-ants' nest into a sack, and tip it out on the aviary floor. Possibly some of the smaller species of ants might be better for small birds, but such species as Pekin Robins (*Leiothrix lutea*), Chaffinches (*Fringilla coelebs*), and Silver-eared Mesias (*Mesia argentigula*) will use wood ants readily. The getting of the ants is an irksome task but can, in summer at any rate, be combined with the collection of fresh ant pupae, a most valuable food for all captive insectivorous birds. There seem to be many factors—as yet unknown—controlling the amount of anting in which individual birds indulge. My Jays almost always ant eagerly if more than two or three weeks have elapsed since they last had opportunity. My Lanceolated Jays anted when first given ants in 1951, but have not done so since. Yet at the London Zoo—where Mr. Yealland has kindly permitted me to make observations—I obtained intense anting behaviour from all three Lanceolated Jays on both occasions when I gave them wood ants. Similarly, a tame Magpie I had never anted during its three years of life, whereas three out of four specimens at the Zoo anted eagerly. Among wild birds, Starlings usually seem eager to ant. A sack of wood ants put on a lawn where Starlings come to feed will be sure to afford the watcher excellent views of anting behaviour. Wild Jays, Chaffinches, Blackbirds, and Song Thrushes (and probably many other species), will also freely avail themselves of this adjunct to the bird table.

*Note.*—The line sketches are intended merely to give a better idea of the movements and postures described. They have no claims to art or detailed accuracy.

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## JENDAYA (OR YELLOW-HEADED) CONURE

*(Aratinga jandaya)*

By V. DILWYN JONES (Llandrindod Wells, Wales)

My Jendayas are housed in an outside enclosure about 17 ft. long, 7 ft. 6 in. high, and 4 ft. 6 in. wide. It is a new aviary which was only completed in May, 1954, and I did not really expect the Conures to go to nest; but when fitting up the aviary with perches, etc., I put in a nesting log by way of completing the equipment, rather than with any hope of breeding. The nesting log is an imitation tree trunk (covered with bark strips) about 5 ft. high, and filled with earth to about 2 ft. 6 in. and having an entrance hole facing north, with the usual inside wire netting "ladder".

During the reconstruction of my aviaries I had to crowd my birds, and with the Conures I put a spare Golden-mantled Rosella cock and about twenty hen budgies.

Early in June I noticed the Conures inspecting the log, and I immediately nailed a stout perch to the outside, giving easy access to the entrance hole. Within a few days both birds were freely entering the log, and soon they began to sleep there at night. Two or three weeks went by and my hopes sank, as I thought the log was only being used as sleeping quarters. I glanced into the log occasionally and on the 16th July I saw that an egg had been laid. It was creamy white in colour and about the same size as that of a Stanley but rather more pointed at the smaller end. Two days later another egg appeared, and then a third.

The hen did not commence serious incubation for two or three days after the last egg had been laid. In fact, one day I saw the eggs were scattered apart, and I thought she had deserted the nest; however, she did settle down eventually, and sat quite closely. The cock did not assist with the incubation, but entered frequently and slept in the log most nights.

About the beginning of August I tried several times to catch the hen off the nest, but, even if she was feeding, immediately I entered the aviary she flew straight back to the log. On the morning of the 14th August, however, I managed a "peep", and was delighted to see that two chicks had hatched. I had no opportunity of inspecting again until 23rd August, when I found that the third egg had hatched, and all three chicks seemed strong and healthy. They appeared very much like big baby budgies—rather skinny and ugly. Later they became covered with fine down, and it was quite a long time before they began feathering.

Both parents assisted in the feeding of the chicks, and as the days went by the hen came off for longer periods, so that I had plenty of oppor-



tunity of observing the growth of the young birds. Each time I lifted the lid-like cover of the log, the cock bird flew towards me in quite a threatening manner. He knows me very well, and before he commenced his parental duties, he was quite tame and would take a monkey nut from my fingers.

After the chicks had hatched, however, he kept a watchful eye on the log, and always flew at me if I laid a hand on it. At that stage I think his threat was a token one, but when the first two chicks left the log on 10th October, he really went for me when next I peeped into the log to ascertain the whereabouts of the third youngster. My wife was watching and was very amused when he landed on my old garden hat and attacked it quite savagely. The third chick left the log four days later.

All three are doing very well as I pen these lines (November, 1954). In appearance they closely resemble the hen, but the head and upper part of the breast is pale yellow, and the orange-red tinting on the lower part of the breast is also paler than that of the parents. Their heads are slightly flecked with green (as is the head of my hen, although I believe many hens have a completely yellow-orangish head).

Immediately they came out of the nesting log the youngsters were able to fly strongly, and were able to perch accurately. I had none of the nerve-racking experience one so often gets when young parakeets emerge and fly around wildly clinging to the wire at the top of the aviary, and floundering about generally. All three young Jendayas were composed and quaintly sedate even on their first day.

My pair of Jendayas have proved excellent parents, as even to-day, nearly five weeks after the young left the nesting log, they are still being fed occasionally by both adult birds.

The three young Conures have grown splendidly, and are now nearly as large as their parents, and they are rapidly becoming as noisy as the latter.

One youngster is more highly coloured than the others and is probably a cock bird. Another of the youngsters has a very thin margin of yellow on some of the green feathers on the upper part of its back which give in a small degree the mantled appearance which is seen in opaline Budgerigars. This yellow edging will probably moult out, but it is just possible that it may be some form of mutation—time alone will show.

It is still too early to sex the youngsters with any degree of certainty, but from their present appearance my guess is that they are a cock and two hens.

The Conures have been fed on sunflower, buckwheat, hemp, millet, and canary with monkey nuts, seeding grasses, and green food of various kinds. In addition when the young were being fed soaked oats and soaked bread were supplied and these were eaten greedily.



## NOTES ON THE WILDFOWL TRUST'S COLLECTION AT SLIMBRIDGE

By S. T. JOHNSTONE (Slimbridge, Glos., England)

During the last eight years we have, through the indefatigable enthusiasm of our Director, Peter Scott, gathered together the most representative collection of waterfowl in the world. In the twenty-five acres enclosed for the purpose, there are, at the time of writing, about 1,200 birds of some 140 kinds, and we have kept during that time more than 150 out of a total of about 220 forms of Anatidæ now known to science.

We have three specimens of the strange and primitive Magpie Goose (*Anseranas semipalmata*), and although the males have gone so far as to build a nest of twigs and straw, the female, unfortunately, has shown no sign of co-operation.

We have kept eight species of Whistling Ducks (*Dendrocygnini*). Three of the rare Spotted species (*Dendrocygna guttata*) came to us in the spring, thriving in our orchard pen until the arrival of the cold weather, when they became restive and sought every opportunity to escape. In consequence they were shut up in our aviary but although these huts were heated with oil lamps, they succumbed during a spell of bitter weather. We have found that the White-faced Whistling Duck (*Dendrocygna viduata*) is also very susceptible to the cold. In the spring of 1954 we obtained a mains electricity supply and hope, when funds permit, to construct a properly heated aviary which will enable us to keep the more delicate species successfully. The Plumed Whistling Duck (*Dendrocygna eytoni*) from Australia seems to be perfectly hardy, but unfortunately all our four specimens are males.

Among the swans, all species of which are represented, there are four fine Trumpeters (*Cygnus cygnus buccinator*), the property of the Queen, and presented to Her Majesty during the Canadian tour. We also have in our care a male Black Swan (*Cygnus atratus*) belonging to Sir Winston Churchill. We are particularly pleased to have bred the Coscoroba Swan (*Coscoroba coscoroba*) twice in the last three years, and two cygnets have been reared. This, so far as we know, is only the second occasion that the species has been bred in this country.

The collection of geese includes members of all species with the exception of the Kelp Goose (*Chloephaga hybrida*). A pair of Falkland Kelp Geese (*Chloephaga hybrida malvinarum*) were presented to the Trust by Dr. W. Sladen on his return from the Falkland Island Dependencies. These beautiful birds fed well and were very tame, but unfortunately contracted aspergillosis; one died four months, and



the other six months after arrival. Undoubtedly the most interesting and valuable birds are the flock of seventeen Hawaiian Geese (*Branta sanvicensis*). Through the great kindness of Mr. Herbert Shipman, of Hilo, Hawaii, we were presented with two females and a male, and from these we have, during the last three years, bred seventeen fine healthy geese. One of the original females died this year from atrophy of the adrenal glands, and a pair of young birds that were sent to another collection for stock purposes were accidentally poisoned.

Other interesting geese in the collection include a specimen of the pink-legged and pink-billed variant of the Bean Goose, which has been described as Sushkin's Goose (*Anser arvensis neglectus*), though there is some doubt whether it is a true subspecies, and the Perry River race of the White-fronted Goose, collected by Mr. Scott on his Canadian expedition, which is intermediate between the large Tule Goose (*Anser albifrons gambeli*) and the typical American form (*Anser albifrons frontalis*). The Hawaiian Duck (*Anas platyrhynchos wyvilliana*), Kerguelen Pintail (*Anas acuta eatoni*), and New Zealand Brown Duck (*Anas aucklandica chlorotis*) are the rarest of our dabbling ducks. A New Zealand Scaup (*Aythya novae-seelandiae*) is perhaps the most interesting of our divers.

What is believed to be the first Hartlaub's Duck (*Cairina hartlaubi*) brought to Europe, has been in the collection for three years. It is extraordinary that this bird of the equatorial forests of West Africa can survive an English winter out of doors. We have made several attempts to keep the Indian Pygmy Goose (*Nettapus coromandelianus coromandelianus*), and indeed a female lived for two years, but the other specimens died as a result of the cold weather.

The European Eider (*Somateria mollissima mollissima*) and the British Saw-bills thrive at the New Grounds on a diet of live eels imported weekly from Denmark. The Eiders breed well, and young Red-breasted Mergansers (*Mergus serrator*) and hybrid Goosander-Mergansers have been hatched. We have not had the same success with Harlequins (*Histrionicus histrionicus histrionicus*) and Longtails (*Clangula hyemalis*), neither of which has lived for longer than six months. The North American Ruddy Duck (*Oxyura jamaicensis jamaicensis*), however, lives well and breeds freely; its delightful display is a source of great amusement to our visitors. A few species have bred at the New Grounds, of which we have not been able to find any previous breeding record in captivity in this country. These include the Southern Redbilled Whistling Duck (*Dendrocygna autumnalis discolor*), Louisiana Mottled Duck (*Anas fulvigula maculosa*), Florida Duck (*Anas fulvigula fulvigula*), Hawaiian Duck (*Anas platyrhynchos wyvilliana*), African Black Duck (*Anas sparsa*), South American Cinnamon Teal (*Anas cyanoptera cyanoptera*), Cape Shoveler (*Anas*



*smithi*), and Red-breasted Merganser (*Mergus serrator*). In addition, the South African Pochard (*Netta erythrophthalma brunnea*) was bred this year from eggs laid in August, but the species had been successfully bred by Terry Jones at Leckford earlier in the season.

One of the enclosures is devoted to hybrid waterfowl. A study of the behaviour and voice of these hybrids, as well as their appearance, casts important light on their relationships, and is of considerable assistance in establishing the course of evolution in this group of birds. For the most part hybrid waterfowl are not handsome, but one or two are exceptions. A male Chiloe Wigeon  $\times$  Carolina (*Anas sibilatrix*  $\times$  *Aix sponsa*) is startlingly beautiful and only slightly less colourful is a male Chilean Teal  $\times$  Carolina (*Anas flavirostris*  $\times$  *Aix sponsa*). The most interesting hybrids are perhaps those between one genus and another. Among others we have the following unexpected crosses: Mallard  $\times$  Shelduck (*Anas platyrhynchos* *platyrhynchos*  $\times$  *Tadorna tadorna*), Mallard  $\times$  Red-crested Pochard (*Anas platyrhynchos* *platyrhynchos*  $\times$  *Netta rufina*), Yellowbill  $\times$  Scaup (*Anas undulata undulata*  $\times$  *Aythya marila marila*), Cape Teal  $\times$  Tufted Duck (*Anas capensis*  $\times$  *Aythya fuligula*) as well as the two hybrids between Dabbling and Perching Ducks mentioned above, and a number of hybrids between the goose genera *Anser* and *Branta*. So far all these hybrids have occurred accidentally and no attempt has yet been made to produce hybrids by deliberate cross pairing. The Trust is very much interested in waterfowl hybrids, and we should like to know of any particularly interesting examples, provided that the parentage is known for certain.

It is the Trust's policy to keep as many birds fully winged as is practicable and we have, at the moment, some thirty-nine species flying. Among these are a flock of twenty Southern Red-billed Whistling Duck. These birds take a keen interest in all the other occupants of the enclosures as well as the staff, and when this entertainment palls, they divide into two forces and hold a pitched battle between themselves.

One of our headaches has been the water supply to our many ponds. This has been obtained from the irrigation ditch which bounds our paddocks and is known locally as a "rhine" (pronounced reen). The amount has varied a great deal, and the flow has been almost negligible, resulting in muddy, unattractive water in the ponds and bare expanses of mud in summer. The aforementioned electricity supply has enabled us to instal two pumping systems. One pump takes water from the rhine at the rate of 20,000 gallons per hour. The other, by means of the "well-point system" produces 5,000 gallons hourly from the water-bearing sand 12 feet below the clay soil of our pens. The result has been most satisfactory. The water in the ponds is now comparatively clear and the levels remain constant.



Hereunder is a list of those kinds of waterfowl at present in our collection :—

Magpie Goose (*Anseranas semipalmata*). Eyton's Whistling Duck (*Dendrocygna eytoni*). Wandering Whistling Duck (*D. arcuata arcuata*). Fulvous Whistling Duck (*D. bicolor*). Cuban Whistling Duck (*D. arborea*). Javan Whistling Duck (*D. javanica*). Whitefaced Whistling Duck (*D. viduata*). Southern Red-billed Whistling Duck (*D. autumnalis discolor*). Coscoroba Swan (*Coscoroba coscoroba*). Black Swan (*Cygnus atratus*). Mute Swan (*Cygnus olor*). Black-necked Swan (*Cygnus melanocorphus*). Whistling Swan (*Cygnus columbianus columbianus*). Bewick's Swan (*Cygnus columbianus bewickii*). Eastern Bewick's Swan (*Cygnus columbianus jankowskii*). Whooper Swan (*Cygnus cygnus cygnus*). Trumpeter Swan (*Cygnus cygnus buccinator*). Canada Goose (*Branta canadensis canadensis*). Western Canada Goose (*Branta canadensis occidentalis*). Taverner's Goose (*Branta canadensis leucopareia*). Cackling Goose (*Branta canadensis minima*). Hawaiian Goose (*Branta sandvicensis*). Barnacle Goose (*Branta leucopsis*). Light-bellied Brent Goose (*Branta bernicla hrota*). Pacific Black Brant (*Branta bernicla nigricans*). Red-breasted Goose (*Branta ruficollis*). Swan Goose (*Anser cygnoides*). Yellow-billed Bean Goose (*Anser arvensis arvensis*). Western Bean Goose (*Anser arvensis rossicus*). Sushkin's Bean Goose (*Anser arvensis neglectus*). Pink-footed Goose (*Anser arvensis brachyrhynchus*). White-fronted Goose (*Anser albifrons albifrons*). Greenland White-fronted Goose (*Anser anser flavirostris*). Pacific White-fronted Goose (*Anser albifrons frontalis*). Perry River White-fronted Goose. Lesser White-fronted Goose (*Anser erythropus*). Greylag Goose (*Anser anser anser*). Eastern Greylag Goose (*Anser anser rubirostris*). Bar-headed Goose (*Anser indicus*). Emperor Goose (*Anser canagicus*). Lesser Snow Goose (*Anser caerulescens hyperboreas*). Blue Snow Goose (*Anser caerulescens caerulescens*). Greater Snow Goose (*Anser caerulescens atlanticus*). Ross's Goose (*Anser rossii*). Ruddy Shelduck (*Tadorna ferruginea*). Cape Shelduck (*Tadorna cana*). Australian Shelduck (*Tadorna tadornoides*). New Zealand Shelduck (*Tadorna variegata*). Red-backed Radjah Shelduck (*Tadorna radjah rufitergum*). Common Shelduck (*Tadorna tadorna*). Egyptian Goose (*Alopochen aegyptiacus*). Egyptian Goose, grey form. Orinoco Goose (*Neochen jubatus*). Abyssinian Blue-winged Goose (*Cyanochen cyanopterus*). Andean Goose (*Chloephaga melanoptera*). Ashy-headed Goose (*Chloephaga poliocephala*). Ruddy-headed Goose (*Chloephaga rubidiceps*). Greater Magellan Goose (*Chloephaga picta picta*). Lesser Magellan Goose (*Chloephaga picta dispar*). Cereopsis Goose (*Cereopsis novæ-hollandiæ*). Crested Duck (*Lophonetta specularioides specularioides*). Andean Crested Duck (*Lophonetta specularioides alticola*). Marbled Teal (*Anas angustirostris*). Cape Teal (*Anas capensis*). Hottentot Teal (*Anas punctata*). Versicolor Teal (*Anas versicolor versicolor*). Puna Teal (*Anas versicolor puna*). African Red-billed Pintail (*Anas erythroryncha*). Bahama Pintail



(*Anas bahamensis*). Chilean Pintail (*Anas georgica spinicauda*). Common Pintail (*Anas acuta*). Kerguelen Pintail (*Anas acuta eatoni*). Chilean Teal (*Anas flavirostris flavirostris*). Sharp-winged Teal (*Anas flavirostris oxypterum*). Common Teal (*Anas crecca crecca*). Green-winged Teal (*Anas crecca carolinensis*). Biakal Teal (*Anas formosa*). Falcated Teal (*Anas flacator*). Australian Grey Teal (*Anas gibberifrons mathewsi*). Chestnut-breasted Teal (*Anas castanea*). New Zealand Brown Duck (*Anas aucklandica chlorotis*). Mallard (*Anas platyrhynchos platyrhynchos*). Hawaiian Duck (*Anas platyrhynchos wyvilliana*). Florida Duck (*Anas fulvigula fulvigula*). Mottled Duck (*Anas fulvigula maculosa*). Black Duck (*Anas fulvigula rubrices*). Indian Spotbill (*Anas poecilorhyncha*). Australian Grey Duck (*Anas superciliosa rogersi*). Philippine Duck (*Anas luzonica*). African Yellow-bill (*Anas undulata undulata*). Abyssinian Yellow-bill (*Anas undulata rupello*). African Black Duck (*Anas sparsa sparsa*). Gadwall (*Anas strepera strepera*). European Wigeon (*Anas penelope*). American Wigeon (*Anas americana*). Chiloe Wigeon (*Anas sibilatrix*). Blue-winged Teal (*Anas discors*). Cinnamon Teal (*Anas cyanoptera cyanoptera*). Andean Cinnamon Teal (*Cyanoptera orinoma*). Garganey (*Anas querquedula*). Argentine Shoveler (*Anas platalea*). Cape Shoveler (*Anas smithii*). Common Shoveler (*Anas clypeata*). Red-crested Pochard (*Netta rufina*). Rosy-bill (*Netta peposaca*). Southern Pochard (*Netta erythrophthalma*). Canvas-back (*Aythya valisneria*). European Pochard (*Aythya ferina*). Redhead (*Aythya americana*). White-eye (*Aythya nyroca*). New Zealand Scaup (*Aythya novæ seelandiæ*). Ring-necked Duck (*Aythya collaris*). Tufted Duck (*Aythya fuligula*). Lesser Scaup (*Aythya affinis*). Common Scaup (*Aythya marila marila*). Ringed Teal (*Anas leucophrys*). Brazilian Teal (*Amazonetta braziliensis*). Schuyl's Teal (*Amazonetta braziliensis vittata*). Maned Goose (*Chinonetta jubata*). Mandarin (*Aix galericulata*). Carolina (*Aix sponsa*). Comb Duck (*Sarkidiornis melanotos melanotos*). S. American Comb Duck (*Sarkidiornis melanotos carunculatus*). Hartlaub's Teal (*Cairina hartlaubi*). Muscovy Duck (*Cairina moschata*). Spur-winged Goose (*Plectropterus gambensis gambensis*). Black spur-winged Goose (*Plectropterus gambensis niger*). European Eider (*Somateria mollissima mollissima*). Barrow's Golden-eye (*Bucephala islandica*). European Golden-eye (*Bucephala clangula clangula*). American Golden-eye (*Bucephala clangula americana*). Smew (*Mergus albellus*). Red-breasted Merganser (*Mergus serrator*). Goosander (*Mergus merganser merganser*). N. American Ruddy Duck (*Oxyura jamaicensis jamaicensis*).

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## OBITUARY

## WALTER GOODFELLOW

It was sad to hear of the death of my old friend, Walter Goodfellow, a great traveller, collector, and naturalist, who I had known for the past fifty years though I had seen or heard little of him for many years past. I hear he died in July, 1953, and it is fitting that something of his work for aviculture and ornithology generally should be recorded in our MAGAZINE.

I think my first meeting with him was in 1904, at Mrs. Johnstone's house, "Burrswood," Groombridge, where he had arrived with a collection of birds from New Guinea. Mrs. Johnstone was a very keen aviculturist, possessing the ambition and means to secure some of the most wonderful birds for her collection, and she had specially engaged Goodfellow to collect some of the treasures to be found in New Guinea. I was very pleased to be invited to meet him and see his first New Guinea collection, which included the Greater, Lesser, and King Bird of Paradise, Manucodes, and many others. He was of the typical explorer type, dark and handsome, with moustache and imperial, reminding me of Buffalo Bill, who I had seen as a child. Even in those days he had travelled extensively and there were not many tropical countries that he had not visited. As early as 1900 he contributed an excellent series of articles to the MAGAZINE entitled "A Naturalist's Notes on Ecuador" of which he considered there was no other country in the world where birds abound in such numbers and varieties. These articles are very well worth reading again. Here is a quotation which shows the kind of travelling he undertook. "Myself and Mr. Claud Hamilton travelled from the Pacific coast and, after crossing all the mountain ranges, journeyed for weeks on foot down through the damp, uninhabited, virgin forests on the eastern side until we reached the headwaters of the Amazon. After staying for months among the wild Indian tribes there, we descended the Napo in dugouts, and so reached the Maramon where we took boats for the remaining 4,000 miles down the Pará, having thus crossed the entire continent."

Goodfellow did a great deal of collecting for the British and Tring Museums in the remote parts of the world, but besides this, proved himself to be an extremely good collector of living birds for aviculturists, bringing home, always in wonderfully good condition, numbers of rare specimens for such well-known aviculturists of those days as Mrs. Johnstone and Mr. E. J. Brook, of Hoddam Castle. By the year 1910 he had imported alive no less than twenty species of Paradise birds alone, and those of us who generally saw the arrival of these collections were impressed by their cleanliness which was evidence of the great care and attention that had been bestowed upon them.



In 1910 Goodfellow made an expedition to Formosa and while there noticed a native wearing in his hair the tail-feather of a Pheasant of striking appearance. The friendly native readily gave up his adornment which he said came from the region of Mount Arizan. Believing the species to be something very rare if not new, Goodfellow proceeded to the mountain and managed to obtain an adult female only, the skin of which he brought home. The species was undoubtedly new to science and was named *Calophasis mikado*, though the male was still unknown except by one tail-feather. The following year, however, Lord Rothschild sent out collectors and obtained specimens of both sexes. In 1912 Goodfellow set out again for Formosa with the express purpose of obtaining living specimens of the Mikado Pheasant for Mrs. Johnstone. He found the birds scarce, but succeeded in bringing home eleven birds which proved to be good breeders. The stock in this country increased, but with the outbreak of the first World War most of the pheasant keepers, like other aviculturists, had to give up their birds, and, I fear, most of the Mikados in Britain went to America.

Another of Goodfellow's discoveries was a handsome Lorikeet, found only in the mountains of Mindanao in the Southern Philippines. He was again on a collecting expedition for Mrs. Johnstone and brought home living examples, as well as skins, of this hitherto unknown bird. The skins were sent to Tring where Dr. Hartert named the species *Trichoglossus johnstoniae*.

In 1911 Goodfellow was selected as leader of a collecting expedition to Dutch New Guinea sponsored by the B.O.U. and the British Museum. Many papers on the collection were contributed to the *Ibis* by W. R. Ogilvie-Grant, and in 1912 the B.O.U. presented Goodfellow with their Gold Medal.

Mr. E. J. Brook, of Hoddam Castle, was a very keen aviculturist who possessed all the requirements for maintaining a fine collection of rare tropical birds, and commissioned Goodfellow to collect for him in Western Ecuador. He spent two years there, eventually arriving home with a superb collection consisting principally of Tanagers, most of which were of species never before seen in Europe, as well as a number of other birds such as Sugar-birds, Grosbeaks and others.

Again in 1925 we find Goodfellow returning home from another trip to New Guinea with over a score of Paradise Birds and others and I well remember on one occasion being invited to "Burrswood" to see a number of Chinchillas for which Goodfellow had made a special expedition to the Andes on behalf of Mrs. Johnstone.

And so we bid farewell to a great naturalist and wonderful collector.

D. S-S.

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## NOTES ON THE NATIONAL SHOW OF CAGE-BIRDS

By DAVID SETH-SMITH (Guildford, Surrey, England)

The great National Show, held at Olympia on 6th to 8th January, was, as usual, a very wonderful exhibition, especially of Budgerigars in every known variety, and Canaries. There were close on a hundred classes for the former alone and all were well filled; a quite bewildering array. British birds also formed a fine display with over forty well-filled classes, and it was interesting to note the large number in the classes for cage or aviary-bred specimens. In fact, the successful breeding of British species appears to have been carried out by many enthusiasts who should have acquired considerable knowledge of their habits, difficult to obtain otherwise. One learns that the British Bird Breeders' Association now numbers its members in hundreds. Besides the more ordinary species one noted Tree Creepers, Goldcrests, Wrens, Pied Flycatchers, Tits, Shorelarks, Pipits, Redstarts, Wagtails of all the British species, Waxwings, and all the Thrushes, Shrikes, Woodpeckers, and Nuthatch. The condition of the birds left nothing to be desired and showed great skill on the part of their owners. Foreign birds were, as usual, a most interesting section and one saw birds seldom, if ever, seen before in this country.

There was a very good entry of Lovebirds of which Fischer's were the most numerous. These seem to have taken to captivity extremely well, while the true Black-cheeked has apparently died out. The Red-faced seems to hold its own, though very difficult to breed, and a pair of these secured first prize. Mr. Sawyer's Salawati King was a fine specimen of a rare species, and there were many other good Parrakeets including Golden-mantled Rosella, Blossom-headed, and Conures of various species.

Mr. Sawyer's fine Lear's Macaw kept up its reputation as a prize-winner in a class of two, the other being a very good example of the Derbyan Parrakeet belonging to Mr. J. E. Williams.

Of the small ornamental finches, Waxbills and the like, there was a grand show in which one noted the Cuban Finch, Olive Finch, Blue-breasted Waxbill, Gouldian and Parrot-finch, Pin-tail Nonpareil, Diamond Sparrow, Long-tailed Grassfinch, and the delightful Violet-eared Waxbill. Zebra Finches have become so popular that they required four classes, three of which were for the various colour varieties that have now appeared. It is proving such an adaptable creature that it, like the Budgerigar and Canary, is becoming a domestic species.

There were several species of Weavers and Whydahs, amongst the



latter being Jackson's, Long-tailed, Paradise, and Queen, of which the last two are said to place their eggs in the nests of some of the Waxbills. Amongst the Cardinals and Grosbeaks was a pair of so-called Pygmy Cardinals which struck me as being extremely attractive, like bantam Green Cardinals, though less green. I have never seen this species before and do not know its correct name. There was also a Chinese Hawfinch and an Evening Grosbeak, both rare species. In the "Other Species" class there was a Spotted Towhee and a Fox Sparrow, two rare and attractive birds.

The class for Birds of Paradise and Bower Birds was disappointing because, owing no doubt to the very bad weather before the show, the owners of five Birds of Paradise had, probably very wisely, decided to keep them at home. The two entries that did appear were an extremely fine Satin Bower Bird in full adult plumage and an adult cock Regent Bird, both sent by Mr. J. E. Williams, who had also entered most of the Paradise Birds.

There was one solitary Humming Bird, a Pucheran's Emerald, exhibited in a very suitable large cage, by Mrs. D. K. Draper. It certainly seemed to be enjoying life in the temperature of the hall, which was fairly well warmed.

The Sunbirds made a fine show with the Malachite, Lesser Double-collared, Amethyst-rumped, Scarlet-chested, and Orange-breasted, and it was with the last of these that Mrs. D. K. Draper won the award for the best foreign bird in the show. It was a truly grand class. Sugar-birds, too, were good with several species, and so were Zosterops and Pekin Robins, while the Tanagers, both small and large, were very fine, including the Yellow (first prize), Blue and Black, Pretre's, Superb Striated, and a good many more. The classes for Flycatchers, Redstarts, Thrushes, etc., were well filled and contained several striking varieties. Mrs. S. J. Williams sent a grand pair of Niltavas, Natal and Cape Robin Chats; Mr. Sawyer a Mountain Blue Bird, Plumbeous Redstart and Natal Robin. He also obtained a first prize for a pair of rare Varied Thrushes, while other good birds in these classes were Silver-eared Mesias, Orange-gorgeted Flycatcher, Hermit Thrush, and Rufous-chinned Laughing Thrush.

There were some nice Starlings, Glossy and otherwise, the first prize going to Mr. Sawyer's very fine Amethyst.

Mrs. D. K. Draper took first prize for a very lovely Hartlaub's Touracou, and in the class for small Insect and Fruit-eaters Mr. Sawyer scored first and second prizes for his Red-headed Manakin and Coppersmith Barbet.

The last two classes in the Foreign section contained some of the most unusual birds in the show. Mr. J. E. Williams sent a pair of what he called "Blood Birds", which I took to be Ox Peckers (*Buphaga africana*), birds that like to remove ticks from the hides of



cattle and then to suck the blood oozing from the wound. They did not look very happy on ordinary perches and would probably have preferred the hide of a cow! There were also an Orange Minivet, Clarino, Red-faced Mouse Bird, Cedar Waxwing, Sibias, and a very rare Cuban Black-browed Woodpecker.

This has certainly been an extremely fine show, splendidly organized by *Cage Birds*, who gave the proceeds to charity. Great credit is due to all concerned.

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## LONDON ZOO NOTES

By J. J. YEALLAND

Early in September Messrs. J. W. Lester and A. J. Woods, Curator of Reptiles and Head Keeper of the Bird House respectively, went to Sierra Leone with two members of the B.B.C. Television Service who took films, photographs, and recordings of a great variety of the lesser known fauna, both vertebrate and invertebrate. A collection of live specimens was, of course, made, and these arrived in London on 16th December. Of the mammals brought back, four were new to the collection; of the birds, fourteen species and subspecies had not previously been exhibited here, and at least two species are new to aviculture.

The rarest prize was, naturally, a White-necked Picathartes (*Picathartes gymnocephalus*) which makes a particularly interesting comparison with the Grey-necked (*P. oreas*) brought from British Cameroon by Mr. Webb in 1948, and still living in the middle aviary at the Bird House. Neither species has ever been given a really satisfactory common name. They were originally known as Bald Crows and placed among the Corvidæ, but are now thought to be more nearly related to the Starlings, though their general deportment rather suggests affinities to the Babblers, while there is some superficial resemblance to *Sarcops calvus*, the Bald-headed Starling of south-eastern Asia. Bannerman's name, the Bare-headed Rock Fowl, suggesting some gallinaceous bird, is hardly appropriate. White-necked and grey-necked are poor descriptive names, for in neither case is the colour confined to the neck feathers. A really good common name would not be easy to find, but something describing the bare and curiously coloured skin of the head would seem to be desirable. The eastern form is confined to the Cameroons; the western one inhabits rocky forest areas of Sierra Leone, the Gold Coast, and Togoland. The nesting and other habits of the two species appear to be similar; the nest is composed of mud and is built on the face of an overhanging



rock. The coloured plate of *P. gymnocephalus* in vol. 6 of Bannerman's *Birds of Tropical West Africa*, is good, except that the legs are not accurately drawn, the tarsus, which is actually between 62 and 68 mm. in length, being shown as much too short. A coloured plate of the Cameroon bird accompanies Mr. Webb's very interesting account in the AVICULTURAL MAGAZINE, Vol. 55, No. 5.

Twenty-six Emerald Starlings (*Coccycolius iris*), most of them in immature plumage, are also of special interest. The adult plumage is of a beautiful metallic golden green with purple on the belly and on either side of the head. A very good coloured plate of this Starling appears in vol. 6 of Bannerman's *Birds of Tropical West Africa*. Other birds new to the Collection were two Forbes' Blue-breasted Kingfishers (*Halcyon malimbicus forbesii*); a Sierra Leone Double-spurred Francolin (*Francolinus bicalcaratus thornei*); a Capuchin Babbler (*Phyllanthus atripennis*); two Black-capped Babblers (*Turdoides reinwardi*); a Brown-crowned Tchagra Shrike (*Tchagra australis ussheri*); a Turati's Bell Shrike (*Laniarius ferrugineus turatii*); a Sooty Boubou Shrike (*L. leucorhynchus*); two Black Whydahs (*Coliuspasser ardens concolor*); two Sierra Leone Crimson Seedcrackers (*Pirenestes sanguineus coccineus*); two White-throated Green Bulbuls (*Pyrrhurus simplex*); four Western Dusky Bulbuls (*Pycnonotus barbatus inornatus*) and a Snowy-crowned Robin Chat (*Cossypha niveicapilla*). This Robin-Chat is the grey-backed form; the dark backed subspecies, *C. n. melanota*, was brought from British Cameroon by Mr. Webb in 1948, and the two birds are shown side by side in the Bird House. The White-throated Green Bulbul seems the best name for *Pyrrhurus simplex*, though White-throated Olive Bulbul might be rather better. Bannerman's name, "Simple Leaf-love" sounds too much like a Shakespearean village idiot, and Sclater's "Simple Bulbul" is not much better. The French "Bulbul modeste" is all very well, but so many other Bulbuls are unassuming in colour, and this one is not more shy and retiring than other closely related forms. The Dusky Bulbuls reminded me of the related *Pycnonotus barbatus nigeriæ* that are so conspicuous about the Cameroon villages, and whose rather discordant inconsequential song was always the first to be heard at dawn.

There were forty Sunbirds in the collection. Of them twenty were the Kemp's Olive-bellied (*Cinnyris chloropygius kempii*); four Coppery (*C. cupreus*); three Superb (*C. superbus*); eight Yellow-bellied (*C. venustus*); two Buff-throated (*Chalcomitra adelberti*), and three Green-headed Olive (*Cyanomitra verticalis*).

Two Swainson's Glossy Starlings (*Lamprocolius chalybeus chloropterus*); two Schlegel's Twinspots (*Mandingoa nitidula schlegeli*); two Yellow-mantled Whydahs (*Coliuspasser macroura*); four Blue-billed Firefinches (*Lagonisticta rubricata polionota*); five Blue-billed Weavers (*Spermophaga hæmatina*); a Grey Plantain-eater (*Crinifer piscator*); a Black-



throated Coucal (*Centropus leucogaster*) ; two Senegal Coucals (*C. senegalensis*) ; two Black Crakes (*Limnocorax flavirostris*) ; five Red-faced Lovebirds (*Agapornis pullaria*) ; three Blue-spotted Wood Doves (*Turtur afer kilimensis*), and an Akun Eagle-Owl (*Bubo leucostictus*) were also brought, together with a number of small seed-eaters such as Firefinches, Combasous, Mannikins, Weavers, etc.

Presentations during November and December included two Gabar Goshawks (*Melierax gabar*) ; four Pink-necked Green Fruit Pigeons (*Treron vernans griseicapilla*), both of these being new to the Collection ; a Javan Fish Owl (*Ketupa ketupu*) ; a pair of Cuban White-crowned Pigeons (*Columba leucocephala*) ; a pair of Peruvian Ground Doves (*Columbigallina cruziana*) ; two Eastern Pin-tailed Sand Grouse (*Pterocles alchata caudacutus*) ; two Rosy Pastors (*Pastor roseus*) ; four Red-faced Lovebirds and a Spotted Eagle-Owl (*Bubo africanus*). It is hoped that this owl will make a mate for the bird, also presented by Mr. von Michaelis some two years ago, and which lays eggs every spring. Some twenty Budgerigars have been bred in the new aviary ; two of them regularly find their way out through the inward pointing wire netting funnel, and return after a flight, so they, at any rate, are good "homers". Two Cockatiels and one Black-footed Penguin have also been bred in the Gardens, and the Emus are laying.

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## BRITISH AVICULTURISTS' CLUB

The forty-fifth meeting of the Club was held at the Rembrandt Hotel, Thurloe Place, South Kensington, S.W. 7, on Wednesday, 12th January, 1955, following a dinner at 7 p.m.

Chairman : Miss P. Barclay-Smith.

Members of the Club : Mrs. J. R. Alderson, Miss K. Bonner, Captain A. Clarence, A. H. D'Aeth, W. T. Dring, Mrs. W. T. Dring, B. H. Dulanty, O. E. Dunmore, A. Ezra, Miss S. A. Fothergill, Miss D. Gask, H. J. Harman, R. E. Heath, Dr. E. Hindle, G. T. Iles, Dr. R. S. Kirk, Miss E. M. Knobel, Miss M. H. Knobel-Harman, G. S. Mottershead, S. Murray, A. A. Prestwich, W. M. Sands, R. C. J. Sawyer, D. Seth-Smith, K. J. Smith, T. Spence, R. A. Taylor, N. S. Walker, H. Wilmot, O. H. Young.

Guests : Dr. K. Aylwin-Gibson, J. Bailey, Miss I. Bois, Hylton Blythe, S. A. Croucher, Mrs. S. A. Croucher, T. W. Dring, Mrs. O. E. Dunmore, G. M. Durrell, Mrs. G. M. Durrell, C. L. Faudell, S. B. Kendall, H. M. Luther, G. T. Lynch, Mrs. N. Masters, Mrs. R. Maurice, Mrs. G. Morell, Mrs. S. Murray, Mrs. D. Seth-Smith, A. E. Sibley, Mrs. R. A. Taylor, Mrs. H. Wilmot, E. J. Woods, Mrs. E. J. Woods, Miss A. Young, Mrs. O. H. Young.

Members of the Club, 31 ; guests, 26 ; total, 57.



Gerald Durrell showed his colour film "Grand Chaco", a pictorial record of his recent collecting expedition in Paraguay.

The film opens with views of the Chaco, a great level plain which stretches across half of Paraguay. It is really a continuation of the flat Argentine pampas. The flora is an odd mixture of temperate subtropical and tropical: thorn scrub overgrown with tropical flowers and woodland, side by side with open patches of savannah land dotted with palm trees and a great variety of cacti. Shots of scenery, birds, and the extraordinary Leaf-cutting or Parasol Ant are shown.

The film proceeds to show how Durrell and his wife organized the camp site, and then went on their first trip into the interior: first travelling on the Chaco Railway (Ford Eights mounted on narrow gauge rails) and then, on reaching the end of the line, continuing the journey in bullock carts. We are shown the collectors hunting for the small fauna and there are pictures of the Horned Toad and the very rare Budgetts Frog, which were the first live examples ever to be brought back to this country.

The local inhabitants helped in the hunting, and the next sequence shows a Paraguayan searching for and capturing the little Three-banded Armadillo. This species had not been seen in London since the 1800's.

On return to camp it is seen how the collection grows day by day; then we see what an average day's work was like, starting with the cleaning out of cages and the preparation of food. There are shots of Crab-eating Racoons, Douroucoulis, the rare nocturnal monkey, Black-faced Ibis, various parrots and parrakeets, Seriema, the Pygmy Owl, and of bottle-feeding a baby Giant Anteater.

The next sequence shows how a local farmer, having had his chicken run robbed by an Anaconda, asks Durrell if he would like to capture it, as it is lying up in a swamp behind his house. They go out on horseback, and ride through the swamp, find the snake, and after a short chase succeed in capturing it. Back in camp, the birds' and animals' reaction to the reptile are shown.

The remainder of the film is devoted to the capture of a Rhea. It is hunted and captured in the old style, by men mounted on horses armed with boleadoras, the deadly South American weapon which consists of three balls on strings that are whirled round and thrown so that they entangle the quarry's legs.

The final scenes are of the departure. This was of a very hurried nature, caused by a local revolution. It must have been very disheartening to the Durrells, after going to so much trouble to get together a representative collection, to have to leave behind all but the more precious and smaller specimens, all there was room for in the aeroplane lent to fly them out.



The Chairman, thanking Gerald Durrell and his wife on behalf of the Club, and congratulating them on the excellency of the film, said it was almost incredible that this was a first attempt at film-making, and that the Club would look forward to seeing any future films. The members and guests signified in the usual manner that they were in complete agreement with these observations.

The next meeting of the Club is on **9th March, 1955.**

A. A. PRESTWICH, *Hon. Secretary.*

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## NEWS AND VIEWS

J. W. H. Anderson, of Durban, Natal, has been very successful in breeding Grey Parrots. Since September, 1951, his breeding pair has reared four young in three nests—a first record for South Africa.

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Folmer Prip, Copenhagen, had an unusual success in that his Mandarin Duck laid thirteen eggs and hatched the whole clutch. One duckling disappeared, but twelve were reared. Rosellas, Bourke's, and two Pennant's Parrakeets were also reared last season.

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In 1911 Mark Armstein, of Cork, had the unique experience of a pair of Hoopoes hatching and fully rearing a nest of five young in his aviaries. He is now over eighty years old, but is well, active, and still retains an interest in birds.

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Wassenaar Zoo. H. A. Gerrits reports that the six Red-collared Lorikeets obtained early in 1953 proved to be three pairs. All three pairs have now bred, so that their aviary is populated with fourteen adults and young.

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Brookfield Zoo, Chicago. Karl Plath, Curator of Birds, writes: "We have succeeded in raising two young Grey Parrots and one young Grand Eclectus. I am fairly certain that this is the first record for either in this latitude and this part of the country."

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Adelaide Zoo. A Red and Yellow Macaw is believed to have been in the possession of the Royal Zoological Society of South Australia before it moved to its present location in 1883. If this is so, the bird is probably getting on for at least 75 years of age.

\* \* \*

A Silver Gull (*Larus novæ-hollandiæ*) with a broken wing, was found at Goolwa, South Australia, on 19th September, 1924. Miss Tuckwell, Dulwich, Adelaide, cared for this bird for many years. It



eventually disappeared towards the end of 1952, and is believed to have been taken by a dog. It must, therefore, have been at least 28 years old.

\*            \*            \*

Captain R. W. Veitch has reared four good Alexandrine Parrakeets ; as well as Mealy Rosellas, Redrumps, etc. Adelaide Zoo, three Blood-breasted Pigeons, from the Philippine Islands, have been bred during the last few months. Ueno Zoo, Tokyo, three Great White Egrets were hatched for the first time. Philadelphia Zoo, two White-necked Cranes and one Stanley Crane : this Zoo is the home of two of the three Stanley Cranes to be hatched in America. San Diego Zoo, one Florida Sandhill Crane.

\*            \*            \*

D. F. Castle writes : " I am sorry to say I did not rear the two young Guiana Parrotlets. They came out of the nest fully feathered, a cock and a hen, but were not very strong on the wing, and could not fly upwards. I put them back in the nest-box each evening, but they seemed to spend most of the day on the ground. When they had been out of the nest-box about ten days the weather was very cold and damp, and I thought they would do better in a cage in my bird-room. I put them with their parents in a four foot cage, and they were all right for a couple of days, but on the third morning I found the young cock bird dead on the cage floor—it had been completely scalped by one or both of the parents. I took the young hen away and put it in a Budgie show cage with plenty of seed on the floor, but it died about a day later—it had always been the weaker bird. I would have said the young cock was feeding itself at the time it was killed."

\*            \*            \*

#### WATERFOWL RINGING SCHEME—DETAILS OF RECOVERIES

<i>Date ringed.</i>	<i>Species.</i>	<i>Ringed by.</i>	<i>Date recovered.</i>	<i>Place where recovered.</i>
May, 1953	Mallard	Wildfowl Trust.	9th May, 1954	Shot at Novo-Zavidovsk, Kalinin Region, U.S.S.R.

\*            \*            \*

What are *you* doing to increase membership ?

An increase in the number of members means an increase in the status of the Society, so that its voice will be heard the more in the furtherance of its object of popularizing the study of British and foreign birds in freedom and in captivity.

Support is desired from *all* members, especially in the enrolment of new members.

A. A. P.



## REVIEW

THE WATERFOWL OF THE WORLD. By JEAN DELACOUR, with illustrations by PETER SCOTT. *Country Life*, London, 1954. Price £5 5s. net.

This is the first of three volumes which will cover the waterfowl, swans, geese and ducks, of the world. It is particularly welcome for no general work on swans and geese is in existence, and J. C. Phillips' *A Natural History of Ducks* is almost unobtainable and in any event its price is far beyond the reach of most aviculturists. This volume deals with the Magpie Goose, the Whistling Ducks, Swans, the true Geese and Brents; the Cereopsis, Sheldgeese, Shelducks, South American Crested Ducks, and Steamer Ducks.

In the introduction the author gives a short survey of the classification of waterfowl, and quotes part of the paper "The family *Anatidae*", which he published in collaboration with Ernst Mayr in the *Wilson Bulletin* (1945), and which contained a proposal for "more natural grouping of species with a better understanding of their affinities expressed by a simpler taxonomy". This classification is followed in the present volume with the exception, as a result of research effected since 1945, of two important points, *Anseranas* being considered as constituting a separate and highly differentiated sub-family, and the tribe *Merganettini* being merged with the *Anatini*.

The principal characteristics of each of the birds dealt with are described, together with its distribution and general habits, both in the wild and in captivity. The sections on captivity will naturally be of greatest interest to readers of the *Avicultural Magazine*, and these have been done with the care, thoroughness, and wide knowledge that would be expected from such an experienced and world-famous aviculturist as Monsieur Delacour.

The book contains sixteen colour plates by that great painter of wildfowl, Mr. Peter Scott. These depict the adults and young of all the birds treated in the text, and facing the colour plates are useful outline drawings of the same subjects. The plates of the chicks are particularly useful. Not all the colour plates reach the same high standard, a case in point being those of the Swans.

There are thirty-three distribution maps and a full systematic list and indexes of scientific and English names. No one interested in waterfowl should be without this book and the two subsequent volumes are awaited with interest.

P. B-S.

\* \* \*



## CORRESPONDENCE

## "A MEETING OF PARROTS"

I am writing this note in the hope that a reader may be able to inform me of the whereabouts of the above-named picture, which is by Henry Stacy Marks, who died in 1898. I have an excellent reproduction in colour of this painting, which depicts most accurately a Hyacinthine Macaw, a Blue-eyed Cockatoo, a Greater Sulphur-crested Cockatoo, a Salmon-crested Cockatoo, a Western Slender-billed Cockatoo, a Leadbeater's Cockatoo, a Blue and Yellow Macaw, and a hen Red-tailed Black Cockatoo. There is also a black-and-white reproduction of the same painting in *The Children's Encyclopædia*, vol. v, p. 3503.

I should be most grateful for information about the picture or regarding the source of the coloured reproduction.

ALAN LONDON.

66 BROUGHAM PLACE,  
NORTH ADELAIDE,  
SOUTH AUSTRALIA.

## AIRPLANE WING

The account of the affliction known by the comical name of "airplane wing"—generally called by the waterfowl breeders "slipped wing"—was very interesting. I had not seen this in any birds other than ducks, geese, and swans, and I believe that it is due to the too rapid growth of the flight feathers which, in the blood-quill stage, may be so heavy that, once they begin to fall outwards, the bird has not the strength to keep them in place. One often sees goslings when growing their first flight feathers, repeatedly hitching up the wing as it were. This condition does not last for many days, and provided that the tip of the wing remains in position all is well.

Affected birds are often apparently strong, well-grown specimens. Keeping the wing tip in place for a few days by means of a sticking-plaster sling corrects the deformity, but care must be taken not to hinder the rapid growth of the flight feathers. An unopinioned Shoveler so treated at Slimbridge was subsequently well able to fly.

ZOOLOGICAL SOCIETY OF LONDON,  
REGENTS PARK, LONDON, N.W. 1.

J. J. YEALLAND.

## WOOD PIGEONS AND STOCK DOVES

I have decided to write some comment, as a member, in appreciation of Mr. Derek Goodwin's notes on Feral Pigeons, an article highly informative and comprehensively presented. The knowledge we Americans have of what you Europeans sometimes refer to as the Common Wood Pigeon is remote and obscure and as for Stock Doves we know nothing either. Our books have failed us miserably.

Therefore there is a crying need in this country for knowledge on both the Wood Pigeon and the Stock Dove, and I have taken upon myself, on behalf of our North-West Avicultural Society, to make every effort to indicate our thirst for knowledge on the subject.

I have mailed you photos of a painting by myself of our Band-tailed Pigeon which may be a close relative of the European Wood Pigeon—we do not know as yet. For some unknown reason the habitat of our Band-tails is limited to part of our Pacific coast only, which seems strange in so vast a country as ours.

Having delved in aviculture and libraries for half a century I find that my efforts in the search for comprehensive pictures of either Stock Doves or European Wood Pigeons have been futile. Mr. Derek Goodwin could render us a great service by contributing an article in the AVICULTURAL MAGAZINE.

DAVID M. JOHNSON.

ROUTE 4, BOX 312,  
PORT ORCHARD,  
WASHINGTON, U.S.A.

(Mr. Goodwin has agreed to write the article desired.—Ed.)



# THE AVICULTURAL : SOCIETY :

FOR THE STUDY OF  
BRITISH & FOREIGN BIRDS  
IN FREEDOM & CAPTIVITY

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1st JANUARY, 1955

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*The date attached to each name is that of the year of election or restoration to the Membership.*

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1949 ADAMSON, REGINALD MAURICE, M.B.O.U. ; Keepers' Lodge, Whipnade Park, Nr. Dunstable, Beds.



- 1944 ALDER, EDWARD ; 49 Swinburne Road, Abingdon, Berks.  
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 1950 CARTWRIGHT, K. G. ; "The Gables," 10 Brick-Kiln Street, Quarry Bank, Nr. Brierley Hill, S. Staffs.  
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 1932 \*CHAPLIN, The Right Hon. the Viscount, F.L.S. F.Z.S., M.B.O.U. ; The Zoological Society of London, Regent's Park, N.W. 1.  
 1951 CHEESMAN, M. R. ; 4888 South 13th East Street, Salt Lake City 7, Utah, U.S.A.  
 1954 CHETWYND, The Right Hon. the Viscount, T.D., F.S.A., F.Z.S. ; Eastbury House, Nr. Newbury, Berks.



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- 1914 CHRISTIE, Mrs. G. ; Kellas, By Elgin, Morayshire.
- 1945 CLARENCE, Capt. A. A. ; Nunton House, Nr. Salisbury.
- 1949 CLARK, G. T., "Maidsmere," Finstall, Bromsgrove, Worcs.
- 1942 CLARK, Mrs. G. T., F.Z.S. ; "Maidsmere," Finstall, Bromsgrove, Worcs.
- 1951 CLARK, J. A. ; 106 Derby Road, Spondon, nr. Derby, Derbyshire.
- 1953 CLARKE, A. J., F.R.I.C.S. ; Foxhole Cottage, Llanbedrog, Nr. Pwllheli, S. Caernarvonshire.
- 1953 CLAYDEN, Capt. C. N. ; The Middlesex Regt., Inglis Barracks, Mill Hill, N.W. 7.
- 1953 CLAYTON, J. C. ; 127 Egerton Street, Farnworth, Nr. Bolton, Lancs.
- 1952 CLAYTON, S. ; Heathfield, St. Philip's Road, Newmarket, Suffolk.
- 1950 CLAYTON, T. L. ; 75 Park Road, Hampton Hill, Middx.
- 1938 CLEMENTS, O. E., L.D.S., R.C.S.(Eng.) ; 1 Bayswater Road, Highlands, Salisbury, Southern Rhodesia.
- 1949 CLEMITSON, J. W. ; 25 St. Paul's Gardens, Whitley Bay, Northumberland.
- 1954 CONWAY, W. G. ; St. Louis Zoological Park, St. Louis 10, Mo., U.S.A.
- 1953 COOMBER, M. S. ; c/o The Bungalow, Burwash, Sussex.
- 1950 COOMBS, E. W., F.Z.S. ; "The Woodlands," Walderslade Road, Nr. Chatham, Kent.
- 1926 COOPER, Mrs. C. M. ; "Villa D'Este," Burges Road, Thorpe Bay, Essex.
- 1953 COOPER, Mrs. F. D. ; Dunstan Lodge, Churchdown, Gloucester.
- 1952 COOPER, J. T. ; Hall Farm, Outwell, Nr. Wisbech, Cambs.
- 1951 CORBETT, R. C. U. ; Itchen Abbas Cottage, nr. Winchester, Hants.
- 1953 CORLETT, J. ; Rt. 6—Box 647, Mobile, Alabama, U.S.A.
- 1942 CORWIN, SAUL C. ; 165 Broadway, New York 6, New York, U.S.A.
- 1954 COTTER, Mrs. E. ; Fourways, 62 South Street, Southwick, Sussex.
- 1950 COWARD, D. M. ; "Karibu," Longfellow Avenue, Wellsway, Bath.
- 1925 COWLEY, H. ; The Manor House, Bubbenhall, Nr. Coventry.
- 1947 COWLISHAW, A. G. ; The Chalet, 35 Aylesbury Street, Bletchley, Bucks.
- 1933 COX, Mrs. B., F.Z.S. ; Barncrosh, Castle Douglas, Scotland.
- 1952 COYNE, Capt. S. F. ; 2nd Bn. The Sherwood Foresters, B.A.O.R. 23.
- 1951 CRAGGS, L. ; 15 Henderson Street, Darlington, Co. Durham.
- 1953 CRAIG, J. ; 111 Glen Avenue, Larkhall, Lanarkshire.
- 1946 CREWES, T. ; "Walton Croft," Manor Way, Beckenham, Kent.
- 1929 CROFTS, ROBERT T. ; 85 Reeves Avenue, Cross Heath, Newcastle, Staffs.
- 1949 CRONE, G. H. ; "Vyverhof," Lage Vuursche, Holland.
- 1948 CUMMINGS, W. D. ; The Keston Foreign Bird Farm, Ltd., Brambletye, Keston, Kent.
- 1952 CUNNINGHAM, A. M., F.Z.S. ; 84 Hamilton Road, East Finchley, N. 2.
- 1928 CURA, L., F.Z.S. ; Water End, Hemel Hempstead, Herts.
- 1953 CURNOW, E. T. ; 3102 North 24th Street, Phoenix, Arizona, U.S.A.
- 1952 CURTO, F. S. ; North Side Conservatory-Aviary, West Park, Pittsburgh 12, Pennsylvania, U.S.A.
- 1939 DABNER, P. L. ; 56 Arkwright Road, Sanderstead, Surrey.
- 1951 D'AETH, A. H., F.Z.S. ; 45 Ormonde Terrace, Regent's Park, N.W. 8.
- 1946 DALBORG-JOHANSEN, J. ; Dyr-laege, Graabrødreplads 6, Odense, Denmark.
- 1949 DALGETY, C. T., M.B.O.U. ; Radnall Mill, Baldock, Herts.
- 1937 DALLOW, F., M.B.E. ; 13 Hillingdon Road, Stretford, Manchester.
- 1954 DANECOURT, W. A. ; Hartley, Dartford, Kent.



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- 1950 DARMAN, H. J., F.Z.S., F.R.H.S. ; 44 Fraser Road, Walthamstow, London, E. 17.
- 1932 DARNTON, Mrs. I. ; Sissinghurst Court, Cranbrook, Kent.
- 1954 DAVIES, G. C. N. ; P.O. Box 1155, Lourenço Marques, Portuguese East Africa.
- 1927 DAVIS, Sir GODFREY, I.C.S., F.Z.S. ; Beresfords, Boughton Monchelsea, Nr. Maidstone, Kent.
- 1941 DAVIS, H. H. ; Little Stoke, Patchway, Bristol.
- 1950 DAY, J. N. E., M.Sc., Ph.D. ; 18 Home Wood Road, St. Albans, Herts.
- 1952 DEACON, D. R. ; 41 Hilders Road, Western Park, Leicester.
- 1951 DEAN, A. W. S. ; Sudbrook Manor, Sudbrook, Grantham.
- 1954 DEAN, T. ; 35 George Street, Louth, Lincs.
- 1952 DEANS, G., F.Z.S. ; 3 New Edinburgh Road, Dalkeith, Midlothian.
- 1953 D'EATH, J. O. ; The Grove, Hadley, Barnet, Herts.
- 1953 DE BEAUMONT, Mrs. G. ; Blairlogie House, Menstrie, Clackmannanshire, Scotland.
- 1954 DE CARVALHO MONTEIRO, A. ; Praca dos Restauradores 13-2° D., Lisbon, Portugal.
- 1949 DE COOMAN, Rev. H. J. J. ; 1 Pontstraat, St. Martens-Leerne, Oost Vlaanderen, Belgium.
- 1917 DECOUX, A. ; Géry, Aix-sur-Vienne, Haute-Vienne, France.
- 1948 DE GOEDEREN, G. ; Orteliuskade 74, Amsterdam, Holland.
- 1954 DE GRAHL, W. ; Menzelstrasse 4, Hamburg/Gr. Flottbek, Germany.
- 1950 DE JONG, L. ; Plantage Kerklaan 40, Amsterdam, Holland.
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- 1924 DENNY, Mrs. H., C.B.E., J.P. ; The Chantry, Horsham, Sussex.
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- 1932 DE PLEDGE, Miss BERYL ISABEL, F.Z.S. ; 9 Beaufort House, Beaufort Street, Chelsea, S.W. 3.
- 1948 DESAI, PRADYUMAN K. ; Takhteshwar Plot, Bhavnagar, Saurashtra, India.
- 1954 DESBOROUGH, K. S. ; 19 Beechwood Road, Hornsey, N. 8.
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- 1945 DEXTER, J. E., M.M. ; Lamorna, Ongar Road, Pilgrims Hatch, Nr. Brentwood, Essex.
- 1951 DIEDRICH, W. W. ; Dierenpark Wassenaar, Rijksstraatweg 667, Wassenaar, Holland.
- 1954 DIGBY, J. M. T. ; 48 CHELMSFORD HOUSE, Holloway Road, N. 7.
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- 1953 DOLTON, K. W. ; Sundown, Oakleigh Avenue, Hallow, Worcester.
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- 1939 DULANTY, BRIAN H., F.Z.S. ; Fisheries Cottage, Chorley Wood, Herts.



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- 1951 EASTICK, D. M. ; The Mill House, Sonning, Berks.  
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- 1952 FRODSHAM, J. ; The Frythe, Welwyn, Herts.
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- 1908 FROST, WILFRED J. C. ; c/o Zoological Society of London, Regent's Park, London, N.W. 1.
- 1947 FROSTICK, W. B. ; 26 Minster Precincts, Peterborough, Northants.
- 1929 FURNER, A. C. ; Oakdene, 115 Whitaker Road, Derby.
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- 1951 GARRATT, J. C. ; "Crossways," Sea Avenue, Rustington, Sussex.
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- 1950 GASK, Miss D., F.Z.S. ; "Twa Noon," Lincoln Road, Chalfont-St.-Peter, Bucks.
- 1948 GEERTSEMA, Lt.-Colonel C. C. ; Soestdijk Palace, Baarn, Holland.
- 1950 GEMMILL, JOHN ; Aikenhead, Kilmarnock, Ayrshire.
- 1948 \*GERARD, Lord, M.B.O.U. ; Blakesware, Ware, Herts.
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- 1950 GILBERT, Mrs. W. O., F.Z.S. ; 31 Douglas Road, Luton, Beds.
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- 1931 GLOVER, P. H., F.Z.S. ; Oparaeana Street, Ngongotaha, Rotorua, New Zealand.
- 1953 GLOVER, P. J. ; Delamore Farm, Cornwood, S. Devon.
- 1950 GODWIN, J. H. ; 21 Vincent Road, Osterley, Isleworth, Middx.
- 1950 GOETZ, L. D. ; 2537 N. Austin Blvd., Chicago 39, Illinois, U.S.A.
- 1950 GOMM, F. A. ; The Cave, Amersham Road, Hazlemere, High Wycombe, Bucks.
- 1953 GOOD, E. H. ; Buckland Fields, Lymington, Hants.
- 1953 GOOD, Mrs. E. H. ; Buckland Fields, Lymington, Hants.
- 1933 GOODALL, A. W. ; 33 Stuart Avenue, Hunts Cross, Liverpool.
- 1945 GOODWIN, DEREK, M.B.O.U. ; Toft, Monk's Road, Virginia Water, Surrey.
- 1953 GOPSILL, R. H. ; 152 Wyggeston Street, Burton-on-Trent.
- 1945 GORDON, Mrs. BEATRICE HOOD CLAESON, F.Z.S. ; Cluny Castle, Monymusk, Aberdeen.



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 1935 GRANT, FRANK ; Parklands, Stoughton Lane, Evington, Leicester.  
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 1951 GRAY, J., A.R.I.B.A. ; "Braemar," Dryburn Road, Durham Moor, Durham.  
 1950 GRAY, W. ; 4 Windsor Close, Trowell, Notts.  
 1954 GREED, R. E. ; Bristol, Clifton, and West of England Zoological Society, Clifton, Bristol 8.  
 1954 GREEN, J. ; The Woodford Pet Stores, George Lane, E. 18.  
 1954 GREENWAY, K. W. ; Park Lane, Long Handborough, Oxford.  
 1952 GREGORY, J. J. ; 66 Carew Road, Hamden, Conn., U.S.A.  
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 1954 GREWCOCK, K. R. E. ; 36 Station Road, Marston Green, Nr. Birmingham.  
 1952 GRICE, H. ; Mount Pleasant, Hanging Grimston, Kirby Underdale, York.  
 1953 GRIFFITHS, A. V. ; Bryn Awel, Llandyssul, Cards.  
 1946 GRIFFITHS, WILLIAM ; Downs End, 152 Worple Road, Wimbledon, S.W. 19.  
 1947 \*GRISWOLD, JOHN A. ; The Zoological Society of Philadelphia, 34th Street and Girard Avenue, Philadelphia 4, Pa., U.S.A.  
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 1951 GRUBER, H. F., F.R.Z.S. (Scot.) ; 9 Churchill, Morningside, Edinburgh 10,  
 1928 GUBBAY, Mrs. MAURICE ; c/o A. Ezra, Esq., Foxwarren Park, Cobham, Surrey.  
 1951 GUDMUNDSSON, Dr. F., M.B.O.U. ; Museum of Natural History, P.O. Box 532, Reykjavik, Iceland.  
 1908 GULBENKIAN, C. S. ; "Kent House," Great Titchfield Street, Oxford Circus, London, W. 1.  
 1947 GULLIVER, V. S. ; 33 Vale Road, Aylesbury, Bucks.  
 1951 GURDEN, R. W. ; 63 Abbott Road, Abingdon, Berks.  
 1927 GURNEY, Miss DIANA ; North Runcton Hall, King's Lynn.  
 1942 GUY, CHARLES P. ; Lamorna Bird Farm, Combe in Teignhead, S. Devon.  
  
 1939 HADDEN, NORMAN G. ; Underway, West Porlock, Somerset.  
 1952 HADLOW, L. A. ; Barbary Farm, Norton, Faversham, Kent.  
 1952 HADZIMA, J. ; 2059 Sweetwater Avenue, Spring Valley, California, U.S.A.  
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- 1945 HARVEY, ARTHUR W. H. ; Rydal, Long Rock, Penzance, Cornwall.
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- 1951 HATCH, H. L. ; The Dudley Zoological Society, Dudley, Worcs.
- 1952 HAWKE, E. H. ; Box 796, Lourenco Marques, Portuguese East Africa.
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- 1939 HILL, W. C. OSMAN, M.D., Ch.B., F.L.S., F.Z.S. ; Lancaster House, Prince Albert Road, London, N.W. 8.
- 1945 HINDLE, E., M.A., Sc.D., F.R.S., F.L.S., F.Z.S. ; The Athenaeum, Pall Mall, London, S.W. 1.
- 1926 HIRST, ROBERT S., F.Z.S. ; Swincliffe House, Gomersal, Nr. Leeds.
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- 1949 JONES, C. G.; 8416 N.E. 3rd Place, Route 1, Bellevue, Washington, U.S.A.
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- 1954 JØRGENSEN, B.; International Zoo Library, Zoo-Centret, Lyngby, Denmark.
- 1952 KAVANAGH, G.; Ormonde House, Arklow, Co. Wicklow, Ireland.
- 1953 KEELING, C. H., F.Z.S.; "Pan's Garden," Ashover, Nr. Chesterfield, Derbyshire.
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 1953 KINGSLAND, W. F. ; Redding, Connecticut, U.S.A.  
 1950 KINGSTON, W. R. ; Springfields, Betchton, Sandbach, Cheshire.  
 1953 KIRBY, C. ; 3 Hurst Grove, Lidlinton, Beds.  
 1950 KIRK, KEITH C. ; 54 Station Road, Sutton-in-Ashfield, Notts.  
 1953 KIRK, Dr. R. S. ; 1 Upper Harley Street, N.W. 1.  
 1948 KIRKALDY, Mrs. M., F.Z.S. ; The Grove, Warley Mount, Brentwood, Essex.  
 1952 KIRKHAM, R. G. ; "The Gables," Wynnsward Park, Clonskeagh, Co. Dublin, Eire.  
 1952 KLAASEN-SÉE, Mrs. M. ; Papaverstraat 42, Bussum, Holland.  
 1954 KLÖVEKORN, WERNER ; Pfalzdorferstrasse 61, (22A) Goch/Rhld, Germany, British Zone.  
 1950 KNIGHTS, W. A. ; 144 Argyle Street, Cambridge.  
 1928 KNOBEL-HARMAN, Miss M. H., F.Z.S. ; 19 Connaught Square, London, W.2.  
 1952 KNÖS, C. J. ; Ludvigsborg, Sweden.  
 1954 KOIDE, HIDEO ; Kabaïke Tokoname-City, Chita-gun, Aichi-pref, Japan.  
 1954 KRAUS, F. ; Neuried 1, Muenchen 49, Germany.  
 1954 KYME, R. T. ; 30 King Street, Kirton, Nr. Boston, Lincs.
- 1947 LABDON, B. ; Millberne, Cullompton, Devon.  
 1951 LABELLE, R. ; 832 Beaubien Street East, Montreal, P.Q., Canada.  
 1929 LAIDLAY, J. C. ; Holmwood, Perth, Scotland.  
 1951 LAKE, Dr. F. B. ; The White House, 5 Portsmouth Road, Kingston-on-Thames.  
 1937 LAKE, GEORGE D., M.B.O.U. ; Audreys, Burghfield Common, Reading, Berks.  
 1945 LAMB, A. ; Mount Pleasant, Hexham, Northumberland.  
 1954 LANCASTER, M. C., B.Sc., M.R.C.V.S. ; Flat D, 26 Belsize Park Gdns., N.W. 3.  
 1954 LANCE, V. P. ; Route No. 3, Denison, Texas, U.S.A.  
 1952 LAND, S. D. ; 841 St. Helens Road, Over Hulton, Bolton, Lancs.  
 1954 LANG, Dr. E. M. ; Zoologischer Garten, Basel, Switzerland.  
 1950 LANGBERG, WALTHER ; Tudskaervej 22, Copenhagen, Vanløse, Denmark.  
 1919 LAW, SATYA CHURN, M.A., Ph.D., F.Z.S., F.N.I., M.B.O.U. ; 50 Kailas Bose Street, Calcutta, India.  
 1952 LAWRENCE, C. C. ; Normacot, Cressing, Braintree, Essex.  
 1930 LAX, J. M. S. ; Southfield, Crook, Co. Durham.  
 1949 LAZZERONI, IVO ; 5034 Templeton Street, Los Angeles 32, Calif., U.S.A.  
 1953 LEE, N. A. ; 25 Wynnwood Avenue, North Shore, Blackpool, Lancs.  
 1946 \*LEMON, Miss E. ; 3007 Wilson Avenue, South Burnaby, B.C., Canada.  
 1952 LESTER, J. W., F.L.S., F.Z.S. ; c/o Zoological Society of London, Regent's Park, N.W. 1.  
 1949 LEVER, H. ; 14 April Street, C-on-M., Manchester 13.  
 1955 LEWIS, Mrs. E. ; P.O. Box, Tipton, Pa., U.S.A.  
 1946 LEWIS, W. O. ; Milnsbridge, Bicton Heath, Shrewsbury.  
 1952 LIMBERG, HANS ; Harscampstrasse 62, Bad Aachen, Germany.  
 1951 LINDSAY, A. ; 422 Lake Street, Oak Park, Illinois, U.S.A.  
 1953 LINFIELD, W. F. ; Grans. Cottage, Thakeham, Nr. Storrington, Sussex.  
 1951 LIPPENS, LÉON ; Den Hul, 43 Boslaan, Knocke-Le Zoute, Belgium.  
 1952 LITTLECHILD, B. ; 4 Rye Mead Cottis, Rye Road, Hoddesdon, Herts.



- 1941 LIVERMORE, JOHN W. ; The Old Stone House, P.O. Box 41, West Redding, Conn., U.S.A.
- 1952 LOAR, J. A. ; 8 Coleridge Road, Wyken, Coventry.
- 1953 LOGAN, F. ; 21 Plantagenet Street, Nottingham.
- 1954 LONSDALE, Mrs. E. M. ; Grove House, Stapleford Abbots, Essex.
- 1951 LOUWMAN, P. ; Dierenpark Wassenaar, Rijksstraatweg 667, Wassenaar, Holland.
- 1952 LOVELL, D. R. ; "St. George," 51 Mildred Avenue, Harlington, Hayes, Middx.
- 1927 LOWE, Rev. J. R., M.A. ; The Vicarage, Coln St. Aldwyns, Cirencester, Glos.
- 1951 LUCAS, V. J. ; Park House, West Rasen, Market Rasen, Lincs.
- 1947 LUMSDEN, Lt.-Col. WILLIAM V. ; Sluie, Banchory, Aberdeenshire, Scotland.
- 1952 LUTHER, H. M. ; 26 Park Crescent, Regent's Park, W. 1.
- 1947 LYNCH, G., F.Z.S. ; 21 Sunnycroft Road, Hounslow, Middx.
- 1954 LYNE, C. E. M. ; Dunfield House, Fairford, Glos.
- 1951 MABEY, R. N. ; Continental Bank Building, Salt Lake City, Utah, U.S.A.
- 1948 MACK, H. G. ; c/o Gilson Manufacturing Co., Ltd., Guelph, Ontario, Canada.
- 1948 MACKENSEN, Dr. RICHARD S. ; Yardley, Pa., U.S.A.
- 1954 MACLEOD, N. ; White Lodge, Strathpeffer, Scotland.
- 1953 MACPHIE, D. J. ; Hazel Cottage, Petersham, Surrey.
- 1953 MACRAE, Miss H. I. ; 15 Forbes Road, Edinburgh 10, Scotland.
- 1947 MAITLAND, Miss M. C. ; North Lodge, Goring-by-Sea, Sussex.
- 1948 MALISOUX, Madame YVAN ; Beez, Namur, Belgium.
- 1950 MALLEN, A. ; 34 Willingsworth Road, Ocker Hill, Nr. Wednesbury, Staffs.
- 1954 MANKEL, W. ; Bahnhofstrasse 44, Dörnigheim am Main, Germany.
- 1954 MANTLE, P. ; 14 Parker Road, Ely, Cardiff.
- 1954 MARLER, C. J. S. ; Pheasants Nest, Weston Underwood, Olney, Bucks.
- 1946 MARSHALL, D. A. ; 21 Wilson Avenue, Troon, Ayrshire.
- 1950 MARSHALL, J. C. ; 25 Stevens Road, Sandiacre, Notts.
- 1930 MARTIN, A. ; 26 Somerford Road, Reddish, Stockport.
- 1954 MARTIN, E. C. ; 28 Cedar Grove, Copnor, Portsmouth.
- 1951 MASON, H., M.C., F.Z.S. ; 2 Dunstan Road, London, N.W. 11.
- 1952 MASON, L. M. ; Talbot Manor, Fincham, King's Lynn, Norfolk.
- 1935 MATTHEWS, Mrs. F. E. ; Glandore, New Park Road, Cranleigh, Surrey.
- 1953 MAUGHAN, T. ; 77 Calton Avenue, Dulwich, S.E. 21.
- 1929 MAXWELL, P. H., F.Z.S., M.B.O.U. ; c/o Zoological Society of London, Whipsnade Park, Nr. Dunstable, Beds.
- 1913 \*MAXWELL-JACKSON, Miss M., F.Z.S. ; Percy House, Scotton, Knaresborough, Yorks.
- 1922 \*MAYER, F. W. SHAW, C.M.Z.S. ; c/o Mr. R. W. Tebb, Lae, New Guinea, via Australia.
- 1935 MERCK, Dr. WOLFGANG ; Marienhöhe 4, Hamburg-Blankenese, Germany.
- 1950 MERRY, C. ; 89 King William Street, Tunstall, Stoke-on-Trent.
- 1951 MIDDLETON, G. ; 50 Carter Street, Uttoxeter, Staffs.
- 1953 MIDDLETON, L. G. ; The Old Vicarage, Church Town, Nr. Garstang, Lancs.
- 1951 MIDWINTER, J. ; 62 Oxford Road, Burford, Oxford.
- 1953 MIGHELL, E. R. ; 106 Selborne Road, Southgate, N. 14.
- 1951 MILLER, H. E. ; "Westwater," Tedburn St. Mary, Nr. Exeter, Devon.
- 1950 MILLER, R. C. ; Standard Bank of South Africa, Ltd., Pietermaritzburg, Natal, S. Africa.



- 1937 MILLIGAN, H. ; Upper Manor Farm, Leckford, Stockbridge, Hants.  
 1951 MILLIGAN, I. B. ; 5 Silsey Avenue, Sale, Cheshire.  
 1954 MILLINGTON, J. J. ; Barn Close, Bushby, Leicestershire.  
 1951 MILNE, R. S. ; 18 Silverwell Street, Bolton, Lancs.  
 1929 MILNES-COATES, Sir CLIVE, Bart., F.Z.S. ; 13 Hyde Park Gate, London, S.W. 7.  
 1937 MILTON, Capt. STANLEY F. ; 75 Portland Avenue, Gravesend, Kent.  
 1948 MITCHELL, A. ; 16 Albany Street, Hull, Yorks.  
 1953 MITCHELL, A. ; 3 Borrowdale Grove, Northfield, Birmingham 31.  
 1952 MITCHELL, Mrs. F. G. ; Clapton Manor, Kettering, Northants.  
 1943 MITCHELL, HAROLD A. ; 2 Stuart Street, East Kilbride, Lanarkshire.  
 1952 MITCHELL, R. E. ; 49 Woodlands Avenue, Church End, Finchley, N. 3.  
 1950 MITCHELL-FOX, Mrs. E. M. ; Tresawle, Wheatridge Lane, Livermead, Torquay, Devon.  
 1951 MOFFIT, C. ; 3 Hartley Avenue, Monkseaton, Northumberland.  
 1953 MØLLER, A. ; Christen Kolds Alle, Kastrup, Denmark.  
 1926 MOODY, A. F. ; Lilford, Oundle, Peterborough.  
 1949 MOODY, H. ; 91 Barbara Avenue, Uppingham Road, Leicester.  
 1950 MOORE, J. T. ; 17 Gold Street, Wellingborough, Northants.  
 1928 MOORE, ROBERT T. ; The Moore Zoological Laboratory, Box 388, Occidental College, Los Angeles 41, California, U.S.A.  
 1953 MORELLI, Mrs. C. P. ; Route 1, Everson, Washington, U.S.A.  
 1954 MORGAN, Mrs. A. ; 38 Inham Road, Chilwell, Notts.  
 1949 MORNAY, C. J. ; 52 Draycott Place, London, S.W. 3.  
 1931 MORRISON, A. R. G., F.Z.S., M.B.O.U. ; Sarikei, Sarawak.  
 1947 MOSFORD, FRANK ; The Elms, Churton Heath, Saughton, Nr. Chester.  
 1927 MOTT, B. ; Grey Mill Farm, Wootton Wawen, Nr. Henley-in-Arden.  
 1929 MOTTERSHEAD, G. S., F.Z.S. ; Zoological Gardens, Chester.  
 1923 MOUNTAIN, Capt. WALTON ; Groombridge Place, Groombridge, Kent.  
 1949 MUNDEN, N. J. ; 81 Wilmer Lodge, Epsom Road, Guildford, Surrey.  
 1952 MURRAY, G. T. ; 821 Buchanan Street, Gary, Indiana, U.S.A.  
 1947 MURRAY, H. ; Bracken, Cornsland, Brentwood, Essex.  
 1952 MURRAY, J. B. ; c/o Messrs. Bovril, Ltd., 123 Chaussée de Mons, Brussels, Belgium.  
 1939 MURRAY, R. J. ; 12 High Road, Camberwell, E. 6, Victoria, Australia.  
 1949 MURRAY, SAMUEL, F.Z.S. ; 18 Somerset Gardens, Lewisham, S.E. 13.  
 1926 \*McCULLAGH, Sir CRAWFORD, Bart. ; Lismara, Whiteabbey, Belfast, N. Ireland.  
 1950 McGOWAN, H. ; 13 Robertson Way, Ash, Aldershot, Hants.  
 1953 McHALE, J. P. ; 1526 W. Highland Avenue, Chicago 26, Ill., U.S.A.  
 1954 McKEE, Mrs. K. M. ; Maple Crescent, Rossland, B.C., Canada.  
 1950 McKENZIE, D. L. ; The New Inn, Winchelsea, Sussex.  
 1934 NAETHER, Professor CARL ; 4442 Woodman Avenue, Sherman Oaks, California, U.S.A.  
 1954 NELSON, A. ; 301 N. Rural Drive, Monterey Park, Calif., U.S.A.  
 1952 NEWELL, J. P., Ph.C., M.P.S.I., D.Opt., M.I.O.S. ; 4 Pearse Street Athlone, Ireland.  
 1930 NEWILL, D. S., M.D. ; Box 634, Connellsville, Pa., U.S.A.  
 1953 NEWLAND, R. A. ; 93 Arne Avenue, Parkstone, Dorset.  
 1931 NICHOLSON, N. ; Edenvale, 16 Weardale Place, Stockton-on-Tees.  
 1950 NICHOLSON, W. ; 15 Neville Road, Darlington.  
 1947 NICOUILLAUD, J. G. ; 48 rue Descartes, Chinon, France.



- 1954 NIX, Mrs. F. ; 1007 N. Zangs Blvd., Dallas 8, Texas, U.S.A.
- 1954 NIXON, T. F. E. ; "Honeystones," Leverington, Wisbech, Cambs.
- 1947 NOBLE, R. A. W. ; Little Grange, Canterbury Road, Margate, Kent.
- 1948 NOORDZIJ, J. H. ; Burg. Visserpark 13, Alphen a/d Rijn, Holland.
- 1949 NOREEN, GEORGE W. ; Route 3—Box 219, Bothell, Washington, U.S.A.
- 1939 NORRIS, KENNETH A., F.Z.S., M.B.O.U. ; Elmstone, 45 Highfield Road, Purley, Surrey.
- 1951 NOURSE, DUDLEY ; "Content," 4 Earlswood Place, Durban North, Natal, South Africa.
- 1953 OAKES, J. H. ; 93 Robinet Road, Beeston, Nottingham.
- 1950 OLIVIER, GEORGES, F.Z.S., M.B.O.U. ; 6 rue Ch.-Flavigny, Elbeuf (Seine Inférieure), France.
- 1945 OLSON, LEO B. ; 835 South First Street, De Kalb, Illinois, U.S.A.
- 1952 OLSSON, C. J. ; Erik Dahlbergsgatan 19, Gothenborg, Sweden.
- 1954 ORSATTI, P. ; 97 Beaver Avenue, Toronto, Ontario, Canada.
- 1928 OSTREHAN, CLEMENT ; Kington Rectory, Worcester.
- 1947 OVEREND, Miss EUNICE ; 49 Alexandra Road, Frome, Somerset.
- 1953 OVERLÄNDER, D. ; Austrasse 17, Bad Honnef/Rhein, Germany.
- 1953 OZANNE, H. W. H. ; Istamboul Lodge, La Ramée, St. Peter Port, Guernsey.
- 1944 PALMELLA, His Excellency the Duke of, F.Z.S. ; 116 Rua Escola Polytechnica, Lisbon, Portugal.
- 1954 PALMER, A. E. ; 11 Hurd Street, Newton Park, Port Elizabeth, S. Africa.
- 1951 PALMER, C. L. ; 102 Paston Lane, Peterborough.
- 1953 PALMER, E. T. ; 4595 Picton Street, Vancouver 16, B.C., Canada.
- 1906 PAM, Major ALBERT, O.B.E., M.A., F.L.S., F.Z.S. ; Wormleybury, Broxbourne, Herts.
- 1950 PANTING, PETER J., B.Sc. ; "Belle Vue," Main Street, Goodwick, Pembs.
- 1950 PARFITT, Sgt. N. D. ; Sgt.'s Mess, 66th Trg. Regt. R.A.C., Catterick Camp, Yorks.
- 1954 PARIS, P. G. ; Boskenna, St. Buryan, Cornwall.
- 1953 PARKER, N. ; Stoneleigh, Scotts Lane, Wilbarston, Nr. Market Harborough.
- 1950 PARREN, RONALD J. ; (Present address unknown.)
- 1952 PARTRIDGE, P. B. ; 164 Waverley Avenue, Twickenham, Middx.
- 1934 PARTRIDGE, W. R., F.Z.S. ; The Bungalow, Lower Haseler, Nr. Evesham, Worcs.
- 1952 PATON, T. ; "St. Quentins," Stoneyburn, By Bathgate, West Lothian.
- 1952 PATTEN, R. A. ; Box 1, Post Office, Mosman, Sydney, N.S.W., Australia.
- 1949 PAYN, Major W. H., M.B.E., M.B.O.U. ; Hartest Place, Bury St. Edmunds, Suffolk.
- 1950 PAYNE, C. M. ; Sherbourne Priors, Warwick.
- 1951 PEARSON, J. C., A.R.S.G.B. ; Southern Kinta Consolidated Ltd., Southern Kampar Section, Tanjong Tualang, Perak, Malaya.
- 1946 PEARSON, RAYMOND ; 179 West Auckland Road, Darlington, Co. Durham.
- 1951 PEASE, Mrs. S. ; R.R.I., Dolgeville, New York, U.S.A.
- 1940 PEAT, RODERICK M., F.Z.S. ; 11 Ironmonger Lane, London, E.C. 2.
- 1954 PEDERSEN, J. P. ; Bernstorffsvej 10, Odense, Denmark.
- 1954 PENN, D. A. L. ; 184 BILLET Road, London, E. 17.
- 1954 PERRY, Miss E. G. ; Cy Press, Stapleford Abbots, Romford, Essex.
- 1953 PERRY, J. A. W. ; 14 New Way, Pinelands, Nr. Cape Town, S. Africa.
- 1948 PHILLIPS, Mrs. A. ; 3 Pond Road, Blackheath, S.E. 3.
- 1954 PHILLIPS, Miss R. F. ; 488 Shirley Road, Hall Green, Birmingham, 28.



- 1935 PHIPPS, Mrs. L. N., F.Z.S., M.B.O.U. ; The Manor House, Minster Lovell, Oxon.
- 1954 PILCHER, R. E. M., M.A., F.R.C.S. ; The Meadows, 39 Spilsby Road, Boston, Lincs.
- 1934 PITT, W. S. ; Wildwood, Silverdale Avenue, Walton-on-Thames, Surrey.
- 1924 PLATH, K. ; 110 S. Wesley Avenue, Oak Park, Ill., U.S.A.
- 1947 PODMORE, C. R. ; 49 Greystones Grange Road, Ecclesall, Sheffield 11.
- 1949 POHLE, HORST C. ; Fichtestrasse 7, Bayreuth, Germany.
- 1937 POLAK, Dr. A. C. ; Spoorstraat 15, Amersfoort, Holland.
- 1925 POLTIMORE, Lady ; Benwell, P.O. Box 6, Bindura, Southern Rhodesia.
- 1920 PORTER, SYDNEY, F.Z.S., M.B.O.U. ; The White Gates, 149 Stenson Road, Derby.
- 1914 POTTER, BERNARD E., M.B., M.R.C.S., L.R.C.P., F.Z.S. ; 39 Devonshire Place, London, W. 1.
- 1954 POWERS, D. W. ; 2224 Roosevelt, Fort Worth 6, Texas, U.S.A.
- 1928 PRESTWICH, ARTHUR A. ; 61 Chase Road, Oakwood, N. 14.
- 1946 PRESTWICH, Mrs. J. A. ; Coltishall, Broad Walk, Winchmore Hill, N. 21.
- 1951 PRIEST, Dr. A. A. ; 434-6 Acheson Building, 2131 University Avenue, Berkeley 4, Calif., U.S.A.
- 1954 PRIP, F. ; Sorrentovej 48, Copenhagen S., Denmark.
- 1953 PUNTER, W. H. ; c/o 14 Nant Eirin Road, Tynybryn, Tonyrefail, Glam.
- 1953 PYE, Brigadier RANDALL, D.S.O. ; Avenings Farm, Danehill, Sussex.
- 1948 QUENBY, H. F. ; "Standard" House, High Street, Baldock, Herts.
- 1913 QUINCEY, R. S. DE Q., F.Z.S. ; The Vern, Bodenham, Hereford.
- 1953 RAATH, J. F. ; P.O. Box 63, Langlaagte, Transvaal, S. Africa.
- 1948 RABBIN, HILBERT J., I.S.O. ; 33 Kingsway, Wembley.
- 1954 RAEVEN, Dr. M. A. ; Houwelingenplantsoen 8, Vught, 's Hertogenbosch, Holland.
- 1949 RAGAN, CALVIN ; P.O. Box 7, Bell, California, U.S.A.
- 1954 RANDAU, G. ; Avenida Rui Barbosa 500, Recife, Pernambuco, Brazil.
- 1953 RANDLE, G. ; 9 Free View Road, Twerton, Bath, Somerset.
- 1943 RANKIN, Lieut.-Col. N., F.R.G.S., F.R.P.S. ; House of Treshnish, Calgary, Isle of Mull, Argyll, Scotland.
- 1950 RATH, JOSEF ; Moosburger Strasse 3, Pfaffenhofen-Jlm (Oberbayern), Germany.
- 1939 RAVEN, WILLIAM H., O.B.E. ; The Mill House, Newbold-on-Stour, Nr. Stratford-on-Avon.
- 1950 RAYMAEKERS, L. ; 71 Avenue Molière, Brussels, Belgium.
- 1947 REAY, J. H. ; Cranmore, The Close, Hillingdon, Middx.
- 1954 REED, Miss A. ; 941 Chelsea Cloisters, Sloane Avenue, London, S.W. 3.
- 1953 REED, Mrs. H. F. ; 2312 So. Buckner Blvd., Dallas, Texas, U.S.A.
- 1950 REES, D. W. ; 79 King's Road, Canton, Cardiff, S. Wales.
- 1950 REES, F. A. D. ; Leckford, Stockbridge, Hants.
- 1939 REID, Miss MARION C. ; c/o Messrs. John Reid, Ltd., Walt Street, Newcastle, N.S.W., Australia.
- 1951 REID-HENRY, D. M. ; 43 West View Drive, Woodford Green, Essex.
- 1951 RENDELL, R. G. ; 60 Guinions Road, High Wycombe, Bucks.
- 1952 RETIEF, J. E. ; 56 Lincoln Street, Bellville, Cape Province, South Africa.
- 1953 REYNAL, E. ; 221 East 49th Street, New York, N.Y., U.S.A.
- 1946 RICARDO, Mrs. MARY C. ; Audreys, Burghfield Common, Reading, Berks.
- 1950 RICH, JOSEPH W. ; 1073 West 11th Street, San Pedro, Calif., U.S.A.



- 1954 RICHARDSON, Mrs. A. O. ; 1317 Poplar Street, Abilene, Texas, U.S.A.  
 1949 RICHARDSON, JAMES ; 101 Stockton Lane, York.  
 1953 RIDLEY, C. T. ; Birdwarren Farm, Varsity View P.O., 3812 Hedley Avenue, Charleswood, Manitoba, Canada.  
 1954 RIGGE, J. S. ; Old Broadgate, Millom, Cumberland.  
 1948 RIIS-HANSEN, KAI ; Nørre Alle 75, Glostrup, Denmark.  
 1937 RIPLEY, S. DILLON, Ph.D., M.B.O.U. ; Kilravock, Litchfield, Conn., U.S.A.  
 1935 RISDON, D. H. S. ; The Dudley Zoological Society, Dudley, Worcs.  
 1943 ROBERTSON, Dr. A. R. ; P.O. Box 95, Kroonstad, O.F.S., South Africa.  
 1947 ROBINSON, B. E. ; Field House, Blackborough Road, Reigate, Surrey.  
 1951 ROBINSON, G. E. ; 487 Little Horton Lane, Bradford.  
 1953 ROBINSON, H. A. ; 903 Arcadia Avenue, Arcadia, Calif., U.S.A.  
 1927 ROBISON, A. W. ; 125 Maiden Lane, San Francisco 8, Calif., U.S.A.  
 1952 RODGERS, J. ; Balland House Cottage, Ashburton, Devon.  
 1951 ROLPH, W. ; Undley Lodge, Lakenheath, Suffolk.  
 1945 ROONEY, JAMES P., M.B.O.U. ; 1514 South 12th Avenue, Yakima, Washington, U.S.A.  
 1946 ROOTE, CYRIL C. ; 116 Cardinal's Walk, Scraftoft Lane, Leicester.  
 1954 ROSE, W. H. ; 44 Sapcote Road, Hinckley, Leics.  
 1954 ROSSITER, Dr. N. A. ; 130 Rosetta Road, Durban, Natal, S. Africa.  
 1953 ROTERS, J. ; Elk Lumber Co., Box 170, Temiskaming, Quebec, Canada.  
 1954 ROTHWELL, Dr. K. G. ; 519 Saffron Lane, Leicester.  
 1952 ROUÉ, H. ; L'Astrée, Boulevard du Théâtre, Chambéry, Savoie, France.  
 1954 ROUILLARD, J. V. ; P.O. Box 72, Stanger, Natal, S. Africa.  
 1951 ROYDEN, T. W. E. ; Broad House, Fleggburgh, Norfolk.  
 1954 RUBNER, H. ; Kunstmühle, Erlangen-Bruck, Bavaria, Germany.  
 1954 RUDD, A. H. ; 22 Church Hill, Purley, Surrey.  
 1952 RUDKIN, F. H., Jr. ; 3rd and Fillmore Streets, Fillmore, California, U.S.A.  
 1950 RUSSELL, BARNABAS, F.R.S.A., F.Z.S., F.R.H.S. ; 20 Bucklersbury, Hitchin, Herts.  
 1954 RUTGERS, A. ; Boeckenrode, Joppe, Holland.  
 1952 RYAN, C. J. ; 515 Madison Avenue, New York 22, N.Y., U.S.A.  
 1927 RYCROFT, Mrs. V. ; (Present address unknown.)
- 1954 SALMON, W. G. ; Angleley Lake, Cranbrook, Kent.  
 1951 SALTERI, D., F.Z.S. ; 44 Montrose Terrace, Edinburgh 7.  
 1953 SANDS, W. M. ; Silver Birches, Farrar Lane, Adel, Leeds 16.  
 1945 SAUNDERS, RONALD, F.Z.S. ; Regent Parade, Sycamore Road, Amersham, Bucks.  
 1950 SAWDEN, M. ; "The Gardens," Uddens, Nr. Wimborne, Dorset.  
 1949 \*SAWYER, R. C. J., F.Z.S. ; 226 Haggerston Road, London, E. 8.  
 1954 SCAMELL, K. M. ; 1 Marine Crescent, North Drive, Great Yarmouth.  
 1953 SCAMELL, Mrs. K. M. ; 1 Marine Crescent, North Drive, Great Yarmouth.  
 1954 SCHENCK, Mrs. E. ; 58 Coleridge Road, Walthamstow, E. 17.  
 1949 SCHNEIDER, P. E. ; 5113 No. Acacia Street, San Gabriel, Calif., U.S.A.  
 1951 SCHUMACHER, Mrs. H. L. ; 7027 Sycamore Avenue, Seattle 7, Washington, U.S.A.  
 1954 SCHUSTER, Dr. H. ; 38 rue V. Hugo, Foulquemont (Moselle), France.  
 1914 SCHUYL, D. G. ; Kralingscheweg 332, Rotterdam O, Holland.  
 1934 SCOTT, A. H., F.Z.S. ; Abbotswell, Frogham, Fordingbridge, Hants.  
 1938 \*SCOTT, PETER, C.B.E., D.S.C., M.A., F.Z.S., M.B.O.U. ; The New Grounds, Slimbridge, Gloucestershire.



- 1952 SCOTT, R. A. ; 1 Lambton Road, Broadmeadow, N.S.W., Australia.  
 1928 SCOTT-HOPKINS, Capt. C., F.Z.S. ; Knoll House, Shiplake, Oxon.  
 1951 SEAGO, J., F.Z.S. ; Hall Common, Ludham, Norfolk.  
 1954 SEARLE, Sqd.-Ldr. K. C. ; Station Officers' Mess, R.A.F. Changi, Singapore 17.  
 1951 SEARS, JOHN L. ; Reel Hall, Shamley Green, Guildford, Surrey.  
 1952 SENNETT, R. S. ; 354 Concord Avenue, Toronto 4, Canada.  
 1953 SEWELL, W. A., F.Z.S. ; Pleasley Road, Skegby, Nr. Mansfield.  
 1951 SHAFFER, B. ; 3006 South West Temple, Salt Lake City, Utah, U.S.A.  
 1954 SHARPE, W. G. ; 6 High Street, Flitwick, Bedford.  
 1932 SHEARING, A. P. ; The Aviaries, Foxwarren Park, Cobham, Surrey.  
 1951 SHELLIM, Dr. M. A. ; c/o The Eastern Bank, Ltd., 2-3 Crosby Square, London, E.C. 3.  
 1953 SHOLAR, Dr. N. P., D.D.S. ; Box 265, Mooresville, N.C., U.S.A.  
 1953 SHONAMAN, W. ; 1890-21 Avenue, New Westminster, B.C., Canada.  
 1946 SIBLEY, A. E., F.Z.S. ; 7 Alexandra Gardens, Hounslow, Middx.  
 1934 SIBLEY, C. L. ; Sevenfires, 111 Main Street, Nantucket, Mass., U.S.A.  
 1953 SIMÕES, J. F. ; L. do Conde Barão 5, Lisboa, Portugal.  
 1924 SIMPSON, H. W. ; 6 Barry Road, Stonebridge, Willesden, N.W. 10.  
 1937 SIMPSON, Mrs. M. K. M. ; The Hollies, Limekilns, Dunfermline, Fife.  
 1947 SLADER, W. T., J.P. ; Pentillie, Honiton Road, Exeter.  
 1954 \*SLOTTER, Mrs. C. F. ; Hopewell, New Jersey, U.S.A.  
 1954 SMART, T. E. ; Castlemead, Tenbury Wells, Worcs.  
 1954 SMITH, Miss E. M. S. ; 98 Castelnau, London, S.W. 13.  
 1941 SMITH, E. WILFORD ; "Lynwood," 15 Kingsway Road, Leicester.  
 1954 SMITH, F. ; 12 Nabs Head Lane, Samlesbury, Nr. Preston, Lancs.  
 1954 SMITH, J. W. ; Henham Lodge, Henham, Herts.  
 1947 SMITH, KENNETH J. ; Paignton Zoological Gardens, Paignton, Devon.  
 1952 SMITH, S. ; c/o Henry Sotheren, Ltd., 2-5 Sackville Street, Piccadilly, London, W. 1.  
 1952 SMITH, S. H. ; 10 South Bay Road, Repulse Bay, Hong Kong.  
 1952 SMITH T. ; 46 Millburn Street, Crook, Co. Durham.  
 1917 SMITH, W. PROCTER, F.Z.S. ; Bexton House, Knutsford, Cheshire.  
 1953 SNAZLE, H. A., M.B.E. ; Chessington Zoo, Ltd., Leatherhead Road, Chessington, Surrey.  
 1946 SOANES, ARTHUR C. ; The Fishery Inn, Elstree, Herts.  
 1950 SOAR, E. R. ; 50 Harvey Road, West End Road, Greenford, Middx.  
 1951 SOUTH, E. A. ; P.O. Box 487, Colusa, Calif., U.S.A.  
 1952 SPEED, Mrs. D. A. ; 925 Clinton Avenue, Fresno, California, U.S.A.  
 1951 SPEEL, C. ; Saxenburgerweg 9, Bloemendaal, Holland.  
 1954 SPENCE, J. M. ; "Jenh," Woodley Road, Plumstead, Cape Town, S. Africa.  
 1952 SPENCE, T., M.R.C.V.S. ; Dunbog, Newburgh, Fife, Scotland.  
 1953 SPILSBURY, D. T. ; 12 Upper Howsell Road, Malvern Link, Worcs.  
 1923 SPRAWSON, Professor Evelyn, M.C., D.Sc., M.R.C.S., F.Z.S. ; Cranford, Welcomes Road, Kenley, Surrey.  
 1923 SPURWAY, N. B. ; "The Hermitage," Oadby, Leicestershire.  
 1939 SQUIRE, E. O. ; Bassmead, St. Neots, Hunts.  
 1954 STAPLES, H. A. ; 210 Broadway, Chico, Calif., U.S.A.  
 1924 STARK, J. ; c/o Mrs. F. W. Boote, 6 Percy Road, Handbridge, Chester, Cheshire.  
 1939 STEINBECK, J. W. ; P.O. Box 832, Concord, California, U.S.A.  
 1954 STEPHAN, H. C. ; Mouille Grange, Mouille Point, Cape Town, S. Africa.  
 1953 STEVENS, A. ; 56 Gwencole Crescent, Braunstone, Leicester.



- 1932 STEVENS, RONALD ; Walcot Hall, Lydbury North, Shropshire.
- 1953 STEWART, T. ; 33 Jeffrey Avenue, Parkfields, Wolverhampton, Staffs.
- 1953 STIVEN, H. ; 27 Park View, Lochgelly, Fife, Scotland.
- 1952 STODDART, R. W. ; Grey Lynn, Flatts Lane, Normanby, Nr. Middlesbrough, Yorks.
- 1922 STOKES, Capt. H. S., M.C., F.Z.S. ; Longdon, Rugeley, Staffordshire.
- 1953 STONE, M. B., Jr. ; Martin's Pond Road, Groton, Mass., U.S.A.
- 1928 STORMONTH-DARLING, P. ; 7 Egerton Court, Harrington Road, London, S.W. 7.
- 1951 STRAIGHT, WHITNEY, C.B.E., M.C., D.F.C. ; The Aviary, Windmill Lane, Southall, Middx.
- 1948 STRANGE, FRANK E. ; P.O. Box 207, Redondo Beach, California, U.S.A.
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- 1930 STROMBI, Miss DORA A. ; Eastbank House, Brechin, Angus.
- 1949 STRUTT, Hon. PETER A. ; Bentley Park, Ipswich, Suffolk.
- 1950 STURGIS, A. F. ; 740 Sansom Street, Philadelphia 6, Pa., U.S.A.
- 1952 SUNDSTRÖM, Miss BRITT-MARIE ; Östra Larmgatan 3, Gothenburg, Sweden.
- 1952 SUTTON, J. W. C. ; The Patch, Salthouse, Holt, Norfolk.
- 1938 SUTTON, PETER, M.R.C.V.S. ; 11 Culverden Park Road, Tunbridge Wells.
- 1951 SVANE, C. H. ; Frederikssundsvej 168, Brønshøj, Copenhagen, Denmark.
- 1950 SVOBODA, Dr. BEN J. ; 1400 E. Olive Street, Compton I, Calif., U.S.A.
- 1902\*\*SWAN, J. A., F.Z.S. ; Hazel Mere, Rectory Lane, Sidcup, Kent.
- 1950 SWAN, Mrs. J. A. ; Hazel Mere, Rectory Lane, Sidcup, Kent.
- 1951 SWANEPOEL, P. ; Central Service Station, Warden Street, Harrismith, O.F.S., S. Africa.
- 1948 SYKES, JOSEPH ; 167 North High Street, Musselburgh, Scotland.
- 1953 TAMBLYN, S. A. ; "Penlaurel," South Petherwyn, Launceston, Cornwall.
- 1946 TANCRED, P. H. ; 19 Hardy Street, Ashfield, Sydney, N.S.W., Australia.
- 1954 TATT, R. H. ; The Willows, Railway Road, Downham Market, Norfolk.
- 1946 TAYLOR, JAMES, M.B.O.U. ; Lower Hilcot, Withington, Cheltenham, Glos.
- 1952 TAYLOR, R. A., F.Z.S. ; 182 Lambeth Walk, London, S.E. 11.
- 1945 TAYLOR, T. G., M.A. ; 16 Derby Road, Caversham, Reading.
- 1954 TEAGLE, W. G. ; Flat 6, 2 The Paragon, Blackheath, S.E. 3.
- 1930 TEAGUE, P. W. ; Rowlestone, Teignmouth Road, Dawlish, Devon.
- 1954 TEAL, G. L. ; 1981 Sayles Blvd., Abilene, Texas, U.S.A.
- 1954 TEMBLETT, H. ; P.O. Box 37, Maseru, Basutoland, S. Africa.
- 1926 TENNANT, Hon. STEPHEN ; Wilsford Manor, Salisbury.
- 1950 TENNEY, Mrs. EDNA ; Star Route, San Marcos Pass, Santa Barbara, Calif., U.S.A.
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- 1954 TIMMIS, W. ; c/o Mayfield Cottage, Hoole Village, Hoole, Chester.



- 1946 \*TINSLEY, PATRICK C. ; Hurn Hall, Holbeach, Spalding, Lincs.  
 1946 \*TINSLEY, WILLIAM G. ; The Poplars, Holbeach, St. Marks, Lincs.  
 1952 TOLLEMACHE, Major J. E. H., M.C. ; Helmingham Hall, Stowmarket, Suffolk.  
 1950 TONG, E. H. ; Zoological Society of London, Whipsnade Park, Nr. Dunstable, Beds.  
 1954 TRAYLER, Miss N. E. ; 20 Kensington, Bath.  
 1951 TREVISICK, C. H., F.Z.S. ; Ilfracombe Zoo Park, Comyn Hill, Ilfracombe, North Devon.  
 1951 TRISE, H. R. ; 89 Dover Road, Copnor, Portsmouth.  
 1952 TROUBRIDGE, Lady ; Middle Oakshott, Hawkley, Liss, Hants.  
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 1954 TYRELL, T. H. ; Bridge House, Brydekirk, Annan, Dumfriesshire.
- 1954 VADEN, J. M. ; 2533 S. 3rd Street, Abilene, Texas, U.S.A.  
 1951 VAN APeldoorn, A. G. ; "Het Soerel," Heerde, Holland.  
 1954 VAN DAM, G. TH. ; Zoo-Centrum, Aalten, Holland.  
 1949 VAN DEN BERGH, WALTER, C.M.Z.S. ; Société Royale de Zoologie d'Anvers, 26 Place Reine Astrid, Antwerp, Belgium.  
 1953 VAN DEN BRINK, G., Jr. ; Soesterbergsestraat 111, Soest, Holland.  
 1953 VAN DER MARK, R. R. P. ; De Kweekhoeve, Van Helvoortlaan 31, Woerden, Holland.  
 1953 VAN DER MERWE, Dr. J. J. A. ; P.O. Box 36, Bellville, C.P., S. Africa.  
 1950 VAN DIJK, H. C. ; Fabriekstraat 6, Tilburg, Holland.  
 1948 VAN DIJK, H. J. ; Animali, Eindhoven, Holland.  
 1950 VAN DIJK, N. ; Bisschop Aelenstraat 50, Tilburg, Holland.  
 1937 VANE, E. N. T., F.Z.S. ; Fairacre, Chiltern Road, Ballinger, Gt. Missenden, Bucks.  
 1934 VAN HEYST, A. F. C. A. ; Koningin Wilhelminalaan 30, Amersfoort, Holland.  
 1950 VAN LEEUWEN, J. DOCTERS ; Hoveniersweg 37, Tiel, Holland.  
 1953 VAN OOSTEN, J. R. ; 2065 Oak Knoll Ave., San Marino 9, Calif, U.S.A.  
 1951 VAN VOLLENHOVEN, P. ; Burgem Knappertlaan 128, Schiedam, Holland.  
 1951 VAN WACHEM, R. H. ; Joh. Geradtsweg 44, Hilversum, Holland.  
 1947 VEITCH, Capt. R. W., M.B.E., D.Sc. ; Redridge, Garforth, Nr. Leeds.  
 1954 VERNON, M. S. ; 23 Osbaldeston Gardens, Gosforth, Newcastle-upon-Tyne.  
 1928 VIERHELLER, GEORGE P. ; St. Louis Zoological Park, St. Louis 10, Mo., U.S.A.  
 1947 VINSON, MARK ; The Beeches Farm, Cowden, Edenbridge, Kent.  
 1954 VLEMMIX, H. P. ; H. Vlemmix' Vogel-en Dierenhandel, Bisschop Zwijsendstraat 116, Tilburg, Holland.  
 1936 VOY, Miss HILDA ; Lynchets, Longbridge Deverill, Warminster, Wilts.  
 1948 VUCOVICH, PAYSON ; Rte. 5, Box 846, Hanford, California, U.S.A.
- 1948 WADDAMS, W. LAWSON ; 34 Thurlston Avenue, Sheldon, Birmingham 26.  
 1947 WAIT, F. R., F.Z.S. ; Bridge House, Hemsby, Nr. Great Yarmouth, Norfolk.



- 1952 WAITE, J. ; 6 Attwood Street, Kidsgrove, Staffs.
- 1948 WAKEFIELD, Mrs. C. H. ; 139 Senic Drive, Palomar Park, Redwood City, California, U.S.A.
- 1953 WALKER, N. S. ; Farthing Green, Farthing Green Lane, Stoke Poges, Bucks.
- 1953 WALKER, P. T. ; Dan-y-Bont, Gilwern, Nr. Abergavenny, Mon.
- 1936 WALLER, H., F.Z.S. ; Oldway, Pilgrims Way, Westhumble, Dorking, Surrey.
- 1951 WALLIN, Mrs. O. H. ; 11543-36 N.E., Seattle 55, Washington, U.S.A.
- 1951 WALMSLEY, J. H. ; 12 Rhodes Street, Mount Pleasant, Port Elizabeth, South Africa.
- 1954 WALTER, C. N., F.S.A.A., M.B.O.U. ; 32 Stanley Avenue, Beckenham, Kent.
- 1952 WARD, Mrs. M. K. ; Dilhorne House, Dilhorne, Stoke-on-Trent.
- 1952 WARING, S. D. ; 13 Oakhill Road, Maghull, Nr Liverpool, Lancs.
- 1935 WARRE, Mrs. PHILIP ; Coppid Hall, Stifford, Essex.
- 1952 WASTELL, C. H. ; "Mon Abri," Stapleford Abbots, Essex.
- 1932 WATKINS, T. R. HOLMES ; Oronsay, The Ellipse, Griffithstown, Mon.
- 1953 WATSON, A. ; 24 River Street, Brechin, Angus, Scotland.
- 1950 WATSON, J. K. ; Doonholm, P.O. Box 757, Nairobi, Kenya Colony.
- 1950 WATTS, R. A. ; 49 Midland Road, Wellingborough, Northants.
- 1913 WAUD, Capt. L. REGINALD, F.Z.S., M.B.O.U. ; Bradley Court, Chieveley, Nr. Newbury, Berks.
- 1954 WEALE, L. C. P. ; 13 Overton Road, Southgate, N. 14.
- 1933 WEAVER, GEORGE, F.Z.S. ; 77 Offmore Road, Kidderminster, Worcs.
- 1929 WEBB, P. B. ; Barney's Brae, Randalstown, Co. Antrim.
- 1935 WEBBER, LEONARD C. ; 6 Grand View Parade, Epping, N.S.W., Australia.
- 1937 \*WEBER, ORLANDO F., Jr. ; (Present address unknown.)
- 1950 WEINMAN, Major A. N., M.B.E., C.M.Z.S. ; The Zoological Gardens of Ceylon, Allan Avenue, Dehiwela, Colombo, Ceylon.
- 1942 WENKE, FRANCIS L. ; P.O. Box 581, Ferndale, Washington, U.S.A.
- 1947 WEST, DAVID ; 209 N. 18th Street, Montebello, California, U.S.A.
- 1932 WHARTON-TIGAR, Mrs. N., F.Z.S. ; The Highlands, Manston, Nr. Ramsgate.
- 1951 WHATLEY, E. C. ; Wonston Manor Cottages, Sutton Scotney, Nr. Winchester, Hants.
- 1950 WHEATLEY, Mrs. GRACE, R.W.S., F.Z.S. ; Heathfield House, Windmill Road, Wimbledon Parkside, S.W. 19.
- 1947 WHEELER, T. E. ; Lynwood, Onslow Avenue, Cheam, Surrey.
- 1947 WHEELER, Mrs. T. E., F.Z.S. ; Lynwood, Onslow Avenue, Cheam, Surrey.
- 1953 WHITE, R. I. ; 2210 Mountain Blvd., Oakland, Calif., U.S.A.
- 1953 WHITEHOUSE, N. V. ; 185 George Street, Brisbane, Australia.
- 1953 WHITFORD, T. B., F.Z.S. ; Bridge Road, Chessington, Surrey.
- 1923 \*WHITLEY, HERBERT, F.Z.S., F.R.H.S., M.B.O.U. ; Primley Hill, Paignton, S. Devon.
- 1950 WHITMARSH, W. N. ; 28b John Street (rear), Porthcawl, Glam.
- 1935 WHITMORE, G. E. ; 168 High Street, West Bromwich, Birmingham.
- 1953 WICKS, Mrs. E. ; Silver Springs, Beaufort Road, St. Leonards-on-Sea, Sussex.
- 1924 WILDEBOER, Dr. H. ; "Tuanna," 244 Saltshouse Road, Sutton, Nr. Hull, Yorks.
- 1930 WILKINS, A. ; Rendcombe, Chesham, Bucks.
- 1950 WILKINS, E. E. ; 52 Shenstone Road, Hollywood, Nr. Birmingham.
- 1949 WILLEMS, Prof. Dr. A. E. R. ; Montereystaat 24, Ghent, Belgium.



- 1907 WILLFORD, HENRY ; Sans Souci, Havenstreet, Ryde, Isle of Wight.  
 1948 WILLIAMS, H. P. ; 2 Burcote Road, Pye Hayes, Birmingham 24.  
 1905 WILLIAMS, SIDNEY, F.Z.S. ; Sea Crest, Nyewood Lane South, Bognor Regis, Sussex.  
 1950 WILLIAMS, T. J. ; Cartref, Sylva Gardens North, Craig-y-Don, Llandudno, N. Wales.  
 1945 WILLIAMSON, T. F. M. ; Benvenuto Avenue, Brentwood Bay, B.C., Canada.  
 1951 WILLMOTT, J. D. ; Box 488, Mount Dora, Florida, U.S.A.  
 1948 WILLSHER, Mrs. G. A. ; 37 Springfield Road, Thornton Heath, Surrey.  
 1950 WILMOT, H., F.Z.S., M.R.I. ; Somerset House Hotel, 6 Dorset Square, London, N.W. 1.  
 1927 WILSON, ANDREW, F.Z.S. ; 233 Argyle Street, Glasgow, C. 2.  
 1948 \*WILSON, CALVIN D., M.A. ; Tracy Aviary, Liberty Park, 589 East 13th South, Salt Lake City 4, Utah, U.S.A.  
 1950 WILSON, G. ; Taormina, 25 Bushmead Road, Eaton Socon, St. Neots, Hunts.  
 1954 WILSON, H. ; 10 Leslie Avenue, Thornton, Blackpool, Lancs.  
 1950 WINCH, R. F. ; Queen Charlotte Fisheries, Ltd., 610 Bidwell Street, Vancouver, B.C., Canada.  
 1953 WINDECKER, Dr. W. ; Zoologischer Garten, Riehler Strasse 173, Köln-Riehl, Germany.  
 1954 WINGATE, W. A. ; De Lunn Buildings, Jewry Street, Winchester, Hants.  
 1922 WINTER, DWIGHT ; 1160 Beechwood Blvd., Pittsburgh 6, Pa., U.S.A.  
 1937 WITTING, R. C., F.R.G.S., F.Z.S., M.B.O.U. ; The Gables, West Horsley, Surrey.  
 1951 WITTING, Mrs. R. C. ; The Gables, West Horsley, Surrey.  
 1953 WOOD, G. ; 8 Forge Meads, Wittersham, Nr. Tenterden, Kent.  
 1951 WOOD, Miss G. J. ; Church Cottage, Tarvin, Nr. Chester.  
 1945 WOOD, H. WALLACE ; Oak Hall, Hythe, Kent.  
 1940 WOOD, J. A. ; 68½ Pitt Street, Sydney, N.S.W., Australia.  
 1903\*\*WORKMAN, WILLIAM H., F.Z.S., M.B.O.U. ; Lismore, Windsor Avenue, Belfast.  
 1950 WRIGHT, S. A., F.Z.S. ; 59 Ashridge Gardens, Palmers Green, N. 13.  
 1947 YAEGER, LEWIS ; P.O. Box 761, Tempe, Arizona, U.S.A.  
 1934 YEALLAND, JOHN, F.Z.S., M.B.O.U. ; The Zoological Society of London, Regent's Park, N.W. 1.  
 1954 YOUNG, O. H., M.B.E. ; 58 Goodwood Avenue, Hutton, Essex.  
 1932 YOUNGER, Mrs. L. ; 244 Cranmer Court, Sloane Avenue, S.W. 3.  
 1953 YOUNGHUSBAND, R. ; Ghyll Mount, Ellenborough, Maryport, Cumberland.  
 1953 ZABALDANO, J. B. ; 15702 E. Nelson Avenue, Puente, Calif., U.S.A.



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- MACLEAN, T. C. ; (Address unknown).
- MCNEILL, C. ; P.O. Box 267, New Plymouth, Taranaki, N.Z.
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FECHNER, C. ; 29 Woodville Road, Woodville, South Australia.  
HOGG, G. ; 49 Wallis Street, Parkside, Adelaide, South Australia.  
MANFIELD, H. ; c/o Zoological Gardens, Adelaide, South Australia.  
McKECHNIE, R. ; 6 Eric Street, Plympton, South Australia.  
SEPPELT, OSCAR ; 57 Northumberland Street, Tasmore, Adelaide, South Australia.  
SEWELL, H. S. ; 14 Stannington Avenue, Toorak East, Adelaide, South Australia.  
WRIGHT, R. ; Langdon Avenue, Clarence Park, South Australia.



## Rules of the Avicultural Society

*Last amended, 11th November, 1953.*

1.—The name of the Society shall be THE AVICULTURAL SOCIETY, and its object shall be the study of British and foreign birds in freedom and in captivity. Poultry, Pigeons, and Canaries shall be outside the scope of the Society. The year of the Society, with that of each volume of the Society's Magazine, which shall be known as the AVICULTURAL MAGAZINE, shall commence with the month of January and end on the 31st December following.

2.—The Avicultural Society shall consist of Ordinary, Life, Honorary Life Members, and Honorary Fellows, and the last shall be restricted in number to ten, and be elected by the Council.

3.—The Officers of the Society shall be elected, annually if necessary, by Members of the Council in the manner hereinafter provided, and shall consist of a President, one or more Vice-Presidents, a Secretary-Treasurer, an Assistant Secretary, an Editor, and a Council of fifteen Members. The President, Vice-Presidents, Secretary-Treasurer, Assistant Secretary, and Editor shall be *ex officio* Members of the Council.

4.—New Members shall be proposed in writing, and the name and address of every person thus proposed, with the name of the Member proposing him shall be published in the next issue of the Magazine. Unless the candidate shall within two weeks after the publication of his name in the Magazine, be objected to by at least two Members, he shall be deemed to be duly elected. If five Members shall lodge with the Secretary objections to any candidate he shall not be elected, but the signatures to the signed objections must be verified by the Scrutineer. If two or more Members shall object to any candidate the name of such candidate shall be brought before the Council at their next meeting, and the Council shall have power to elect or to disqualify him from election.

5.—Each Member shall pay an annual subscription of £1, to be due and payable in advance on the 1st of January in each year; and, on payment of the subscription shall be entitled to receive all the numbers of the Society's Magazine for the current year. Life Member's fee, £15.

6.—Members intending to resign their membership at the end of the current year of the Society are expected to give notice to the Secretary before the 1st of December, so that their names may not be included in the "List of Members", which shall be published annually in the January number of the Magazine.



7.—The Magazine of the Society shall be issued on or about the first day of every month, and forwarded, post free, *to all the Members who shall have paid their subscriptions for the year ; but no Magazine shall be sent or delivered to any Member until the annual subscription shall have reached the hands of the Secretary-Treasurer.* Members whose subscriptions shall not have been paid as above by the first day in November in any year shall cease to be Members of the Society, but may be readmitted, at the discretion of the Council, on payment of the annual subscription.

8.—The Secretary-Treasurer, Assistant Secretary, and Editor shall be elected for a term of five years, and, should a vacancy occur, it may be temporarily filled by the Executive Committee (see Rule 10). At the expiration of the term of five years in every case it shall be competent for the Council to nominate the same officer, or another Member, for a further term of five years, unless a second candidate be proposed by not less than twenty-five Members of at least two years' standing, as set forth below.

In the November number of the Magazine preceding the retirement from office of the Secretary-Treasurer, Assistant Secretary, and Editor, the Council shall publish the names of those members whom they have nominated to fill the vacancies thus created ; and these Members shall be deemed duly elected unless another candidate or candidates be proposed by not less than fifteen Members of at least two years' standing. Such proposal, duly seconded and containing the written consent of the nominee to serve, if elected, in the capacity for which he is proposed, must reach the Secretary on or before the 15th of November.

9.—The Members of the Council shall retire by rotation, three at the end of each year of the Society (unless a vacancy or vacancies shall occur otherwise) and three other Members of the Society shall be recommended by the Council to take the place of those retiring. The names of the three Members recommended shall be printed in the November number of the AVICULTURAL MAGAZINE. Should the Council's selection be objected to by fifteen or more Members, these shall have power to put forward three other candidates, whose names, together with the signatures of not less than fifteen Members proposing them, must reach the Secretary *by the 15th of November.* The names of the six candidates will then be printed on a voting paper and sent to each Member with the December number of the Magazine, and the result of the voting published in the January issue. Should no alternative candidates be put forward, in the manner and by the date above specified, the three candidates recommended by the Council shall be deemed to have been duly elected. In the event of an equality of votes the President shall have a casting vote.

If any Member of the Council does not attend a meeting for two years in succession the Council shall have power to elect another Member in his place.

10.—Immediately after the election of the Council that body shall proceed to elect three from its Members. These three, together with the Secretary-Treasurer, Assistant Secretary, and Editor, shall form a Committee known as the Executive Committee.

The duties of the Executive Committee shall be as follows :—

(i) In the event of the resignation of any of the Officers during the Society's year, to fill temporarily the vacancy until the end of the year. In the case of the office being one which is held for more than one year (e.g. Secretary-Treasurer, Assistant Secretary, or Editor) the appointment shall be confirmed by the Council at its next meeting.



(ii) To act for the Council in the decision of any other matter that may arise in connection with the business of the Society.

The decision of any matter by the Executive to be settled by a simple majority (three to form a quorum). In the event of a tie on any question, such question shall be forthwith submitted by letter to the Council for their decision.

The Executive shall not have power

(i) To add to or alter the Rules ;

(ii) To expel any Member ;

(iii) To re-elect the Secretary-Treasurer, Assistant Secretary, or Editor for a second term of office.

It shall not be lawful for the Treasurer to pay any account exceeding £10 unless such account be duly sanctioned by another Member of the Executive.

It shall be lawful for the Secretary-Treasurer or Editor to pledge the Society's credit for a sum not exceeding £100.

Should a Member wish any matter to be brought before the Council direct such matter should be sent to the Secretary with a letter stating that it is to be brought before the Council at their next meeting, otherwise communications will in the first place be brought before the Executive.

A decision of a majority of the Council, or a majority of the Executive endorsed by the Council, shall be final and conclusive in all matters.

11.—The Editor shall have an absolute discretion as to what matter shall be published in the Magazine (subject to the control of the Executive Committee). The Secretary and Editor shall respectively refer all matters of doubt and difficulty to the Executive Committee.

12.—The Council (but not a committee of the Council) shall have power to alter and add to the Rules, from time to time, in any manner they may think fit. Five to form a quorum at any meeting of the Council.

13.—The Council shall have power to expel any Member from the Society at any time without assigning any reason.



## The Society's Medal

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### RULES

The Medal may be awarded at the discretion of the Council to any Member who shall succeed in breeding, in the United Kingdom, any species of bird which shall not be known to have been previously bred in captivity in Great Britain or Northern Ireland. Any Member wishing to obtain the Medal must send a detailed account for publication in the Magazine within about eight weeks from the date of hatching of the young, and furnish such evidence of the facts as the Council may require. The Medal will be awarded only in cases where the young shall live to be old enough to feed themselves, and to be wholly independent of their parents. The question of awarding a Medal for the breeding of local races or sub-species of species that have already been bred shall be at the discretion of the Council. No Medal can be given for the breeding of hybrids.

The account of the breeding must be reasonably full so as to afford instruction to our Members, and must appear in the AVICULTURAL MAGAZINE before it is published or notified elsewhere. It should describe the plumage of the young, and *be of value as a permanent record of the nesting and general habits of the species*. These points will have great weight when the question of awarding the Medal is under consideration.

In every case the decision of the Council shall be final.

The Medal will be forwarded to each Member as soon after it shall have been awarded as possible.

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The Medal is struck in bronze (but the Council reserve the right to issue it in *silver* in very special cases) and measures  $2\frac{1}{2}$  inches in diameter. It bears on the obverse a representation of two birds with a nest containing eggs, and the words "The Avicultural Society—founded 1894". On the reverse is the following inscription: "Awarded to [*name of recipient*] for rearing the young of [*name of species*], a species not previously bred in captivity in the United Kingdom."

The Council may grant a special medal to any member who shall succeed in breeding any species of bird that has not previously been bred in captivity in Europe.











## CANDIDATES FOR ELECTION

- G. VANDEN BROECKE, Wakken, West Flanders, Belgium. Proposed by A. A. Prestwich.  
A. H. BROOKING, 31 Grovelands Road, Purley, Surrey. Proposed by A. A. Prestwich.  
J. CARPENTIER, Diepestraat 59, Antwerp, Belgium. Proposed by W. Van den bergh.  
W. DEAN, 20 Manor Road, Bolenall, Tamworth, Staffs. Proposed by Miss K. Bonner.  
Miss B. FRANCIS, 51 Chelsea Manor Buildings, Flood Street, Chelsea, S.W. 3. Proposed by Miss K. Bonner.  
R. A. F. GILLMOR, 58 Northcourt Avenue, Reading, Berks. Proposed by Miss K. Bonner.  
Mrs. G. E. GLASS, Gonzana, Fortbeaufort, Eastern Cape Province, South Africa. Proposed by A. A. Prestwich.  
H. HARTMANN, Ragnesminde, Glostrup, Denmark. Proposed by F. Prip.  
H. J. HESLOP, Witton Lodge, Simonstone, Nr. Burnley. Proposed by A. A. Prestwich.  
B. M. KILLICK, "Sandhome," Raunds, Wellingborough, Northants. Proposed by A. A. Prestwich.  
C. LEE, Harbour Cottage, Crabmarsh, Wisbech, Cambs. Proposed by R. H. Tatt.  
D. LIEVENS, Kaaiweg 44, Moerzeke, By Dendermonde, Belgium. Proposed by A. A. Prestwich.  
J. A. LUKE, Bona Lodge, Aldourie, Inverness. Proposed by N. Macleod.  
Mrs. G. MORELL, 29 Linden Gardens, London, W. 2. Proposed by Dr. E. Hindle.  
C. A. OLLEY, 163 Avon Road, Chelmsford, Essex. Proposed by Miss K. Bonner.  
N. PIGG, 3427 McCormick Avenue, Hollywood, Ill., U.S.A. Proposed by K. Plath.  
D. G. SCRAGG, 4 Drakefield Road, Liverpool 11. Proposed by Miss K. Bonner.  
J. J. STROLLO, Box 577, H.Q., Far East Air Forces, A.P.O. 925, San Francisco, Calif., U.S.A. Proposed by A. A. Prestwich.  
J. TACK, Tyting Garage, St. Martha's, Guildford, Surrey. Proposed by Miss K. Bonner.  
J. W. TWELL, Caravan, Clay Lane, Marlow, Bucks. Proposed by Miss K. Bonner.  
P. USHER, 47 Edinburgh Drive, Kirton, Boston, Lincs. Proposed by R. T. Kyme.  
S. A. MAN IN'T VELD, "Eikenoord," Deventerstraat 494, Apeldoorn, Holland. Proposed by Dr. H. Bauer.  
J. O. WAHLGREN, 24 Garth Road, Kingston-on-Thames, Surrey. Proposed by A. A. Prestwich.  
Mrs. WHENT, 53 Tresco Road, Peckham Rye, London, S.E. 15. Proposed by E. N. T. Vane.  
N. WILKINSON, Glebe Low, Biddulph Park, Stoke-on-Trent. Proposed by R. E. Heath.  
F. WORKMAN, 28 Park Road, Enfield, Middx. Proposed by A. A. Prestwich.

## NEW MEMBERS

The eleven Candidates for Election in the November-December, 1954, number of the AVICULTURAL MAGAZINE were duly elected members of the Society.

## READMITTED

C. N. CAPRON, 1020 South L. Street, Lake Worth, Florida, U.S.A.

## CHANGES OF ADDRESS

- Mrs. E. J. BIRCHALL, to "Sundown", Storrs Park, Bowness-on-Windermere, Westmorland.  
L. DALE GOETZ, to 3116 N. Ernst Street, Franklin Park, Ill., U.S.A.

## DONATIONS

(Coloured Plate Fund)

	£	s.	d.
J. SPEDAN LEWIS . . .	5	0	0
H. COWLEY . . .	2	3	0
J. A. SWAN . . .	2	2	0
S. MURRAY . . .	2	0	0
Mrs. J. DALZIEL BIRRELL . .	1	0	0
D. M. COWARD . . .	1	0	0



## MEMBERS' ADVERTISEMENTS

*The charge for Members' advertisements is ONE PENNY PER WORD. Payment must accompany the advertisement, which must be sent on or before the 15th of the month to A. A. PRESTWICH, 61 CHASE ROAD, OAKWOOD, N. 14. All members of the Society are entitled to use this column, but the Council reserves the right to refuse any advertisements they consider unsuitable.*

### WANTED

Hen Bobolink.—W. M. SANDS, Silver Birches, Farrar Lane, Adel, Leeds 16. Tel. 78661.

Hens Peach-faced and Abyssinian Lovebirds, Golden-mantled Rosella.—Major V. DILWYN JONES, Sherwood, Grosvenor Road, Llandrindod Wells, Radnor.

Salim Ali, *The Book of Indian Birds*.—K. S. HARRAP, 2 Colchester Avenue, Sedgley Park, Prestwich, nr. Manchester, Lancs.

Gouldian Finch hen, Black-headed or Red-headed.—Mrs. F. E. MATTHEWS, Glandore, New Park Road, Cranleigh, Surrey.

Hen Chukkor Partridge.—A. C. FURNER, Oakdene, 115 Whitaker Road, Derby.

Cock Barraband's Parrakeet.—A. A. PRESTWICH, 61 Chase Road, Oakwood, N. 14.

### FOR SALE

Exhibition Budgerigars for Parrakeets, Lovebirds, or Pheasants.—W. M. SANDS, Silver Birches, Farrar Lane, Adel, Leeds 16. Tel. 78661.

Four 1954 Bahama Pintail, six 1953 male Carolinas, or exchange Versicolor Teal, Stiff-tailed Duck, etc.—C. D. WESTON, Bradgate House, Grosby, Leics.

### EMPLOYMENT

Royal Central Parks Birdkeeper seeks responsible position ; fully experienced in all birdlife, including waterfowl breeding ; will take full charge with staff control.—W. H. PUNTER, c/o 14 Nant Eirin Road, Tynybryn, Tonyrefail, Glam.

### WATERFOWL RINGS

Members are reminded that the Society's special blue rings are always available. All Waterfowl in collections, both public and private, should carry them.

Size.		Price per dozen, post free.	
		s.	d.
2-3	Teal . . . . .	2	3
3	Wigeon . . . . .	2	6
4	Mallard, Pintail, etc. . . . .	2	9
4-5	Smaller geese . . . . .	3	6
5	Greylag . . . . .	4	0

Requests for rings should be addressed to the Hon. Secretary, Avicultural Society, c/o Zoological Society of London, Regent's Park, London, N.W. 1, from whom all particulars can be obtained.

### POST-MORTEM EXAMINATIONS

Attention is drawn to the following rules :—

Rule 1.—A short account of the illness should accompany the specimen. All birds to be sent as fresh as possible to Mr. W. Lawrence, The Zoological Society of London, Regent's Park, London, N.W. 1.

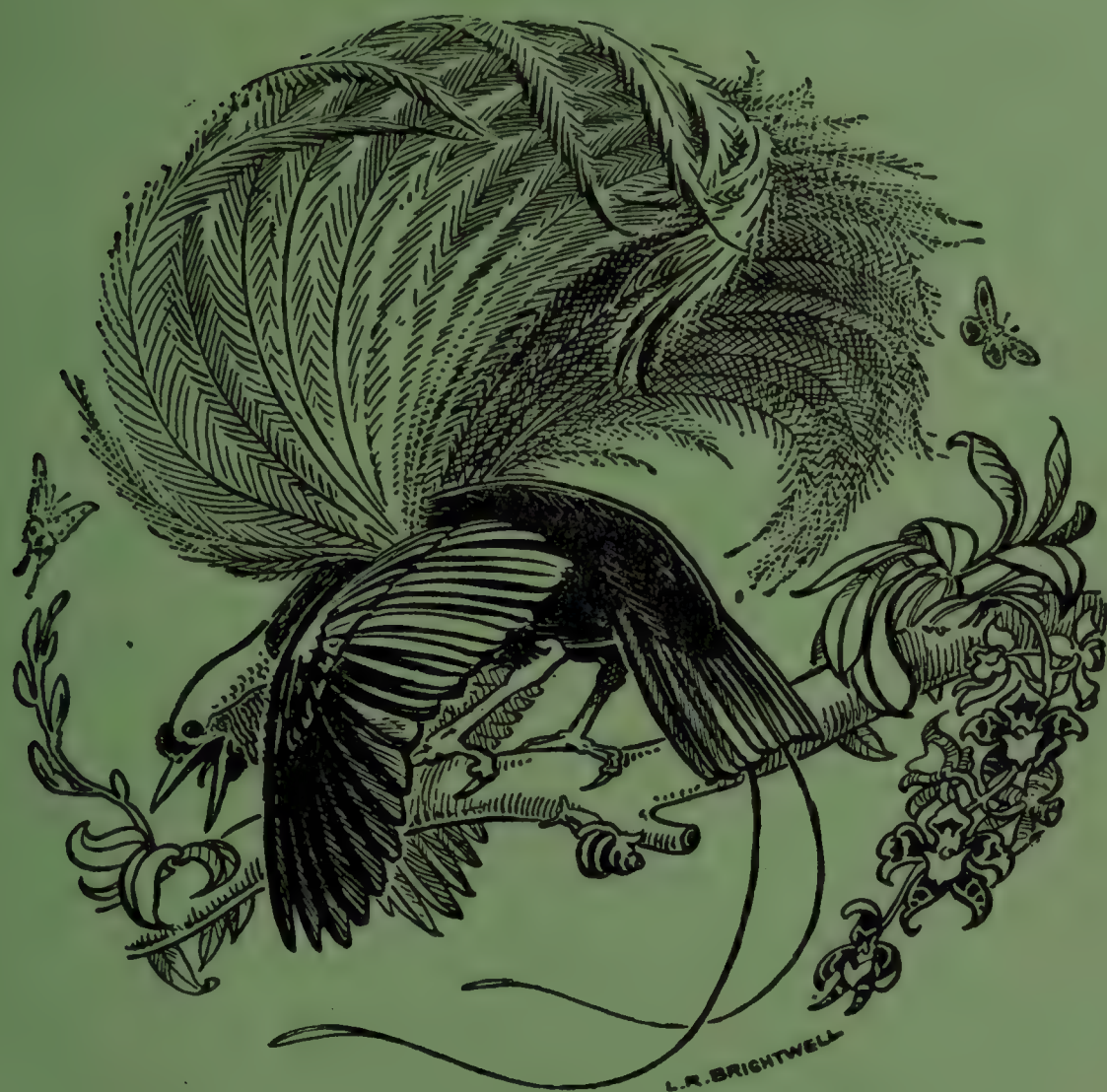
Rule 2.—A fee of 10s. and a stamped addressed envelope MUST be enclosed with the bird.

Rule 3.—No body or skin of any bird will be returned under any circumstances whatever.

ARTHUR A. PRESTWICH,  
Hon. Secretary.



# AVICULTURAL MAGAZINE



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# THE AVICULTURAL SOCIETY

Founded 1894

**President : A. Ezra, Esq., O.B.E.**

**Hon. Secretary and Treasurer : A. A. Prestwich, 61 Chase Road,  
Oakwood, London, N. 14.**

**Assistant Secretary : Miss Kay Bonner.**

Membership Subscription is £1 per annum, due on 1st January each year, and payable in advance. Life Membership £15. Subscriptions, Changes of Address, Names of Candidates for Membership, etc., should be sent to the Hon. Secretary.

## THE AVICULTURAL SOCIETY OF AMERICA

**President : M. Jean Delacour.**

**Secretary-Treasurer : Ivo Lazzeroni, 5034 Templeton Street, Los Angeles 32,  
California, U.S.A.**

The annual dues of the Society are \$3.50 per year (foreign dues \$3.75 or £1 7s.), payable in advance. The Society year begins 1st January, but new members may be admitted at any time. Correspondence regarding membership, etc., should be directed to the Secretary-Treasurer. Members of the Avicultural Society may become members of the Avicultural Society of America on payment of \$1.00 per year.

## THE AVICULTURAL MAGAZINE

The Magazine is published bi-monthly, and sent free to all members of the Avicultural Society and Avicultural Society of America. Members joining at any time during the year are entitled to the back numbers for the current year on the payment of subscription. All matter for publication in the Magazine should be addressed to :—

**The Editor : Miss Phyllis Barclay-Smith, 51 Warwick Avenue, London,  
W. 9. Telephone : Cunningham 3006.**

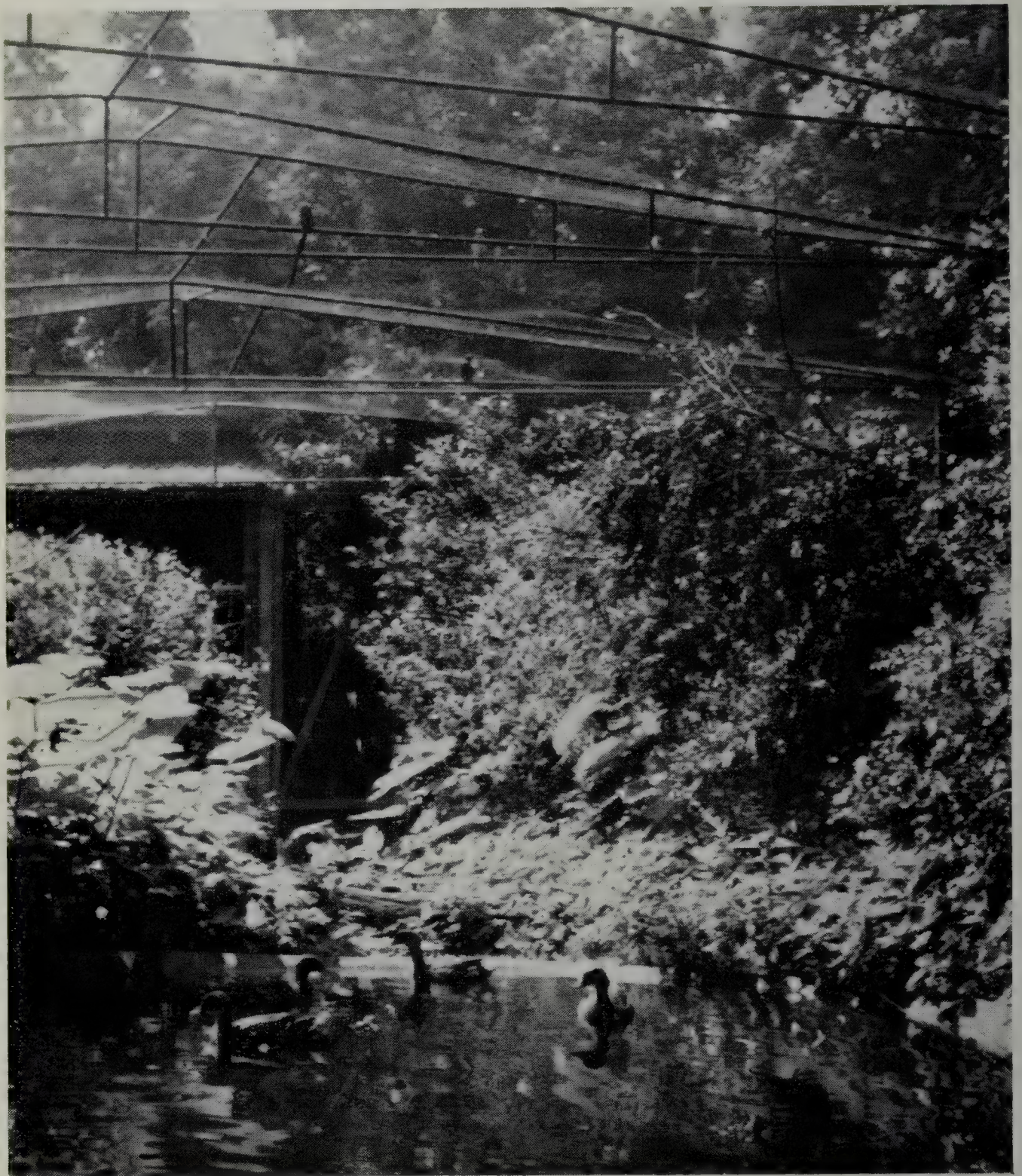
The price of the Magazine to non-members is 5s., post free, per copy, or £1 10s. for the year. Orders for the Magazine, extra copies and back numbers (from 1917) should be sent to the publishers, Stephen Austin & Sons, Ltd., Caxton Hill, Ware Road, Hertford, England. Telephone : Hertford 2352/3/4.







Avic. MAG. 1955.



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[Alec Brooksbank

PART OF NEW 70 FT. POND ENCLOSURE AT KESTON.

*Frontispiece*



# AVICULTURAL MAGAZINE

THE JOURNAL OF THE AVICULTURAL SOCIETY  
AND THE AVICULTURAL SOCIETY OF AMERICA

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MARCH-APRIL, 1955

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## BREEDING RESULTS AT THE KESTON FOREIGN BIRD FARM, SEASON 1954, AND SOME RECENT ACQUISITIONS

By EDWARD J. BOOSEY (Keston, Kent, England)

Despite a summer which, for sheer vileness, beat all records even for our climate, our breeding results at Keston were not nearly as bad as I had feared they might be.

The arctic cold of mid-May caused, as I have already recorded, the death in the nest of three young blue Ringnecks, while Magpies dealt successfully with the fourth, after it was fledged, by pecking it as it clung to the wire netting and inflicting a chest wound from which it subsequently died.

For the first time for many years our old pair of lutino Ringnecks not only reared no young ones, but did not go to nest at all. If this was because of the weather, one can hardly blame them, but I suspect that a contributory cause may have been the fact that they had only just been moved into a new aviary. This unfortunately was necessary in the case of many of our breeding pairs of parrakeets as all our aviaries are in process of being completely reconstructed, with enlarged flights, having metal instead of wooden framework, and many of those to house breeding pairs were not ready for occupation until March.

Two nice young lutino Ringnecks were reared, however, by a new green hen mated to a lutino-bred cock bred here a few years ago, and they reared two green young ones in the same nest.

An Alexandrine mated to a cock Alexandrine  $\times$  lutino Ringneck hybrid had infertile eggs.

One pair of Layard's had clear eggs, while the other pair hatched a single young one which, when about half grown, succumbed to the cold at the same time as the three young blue Ringnecks. Both pairs are very young, however, and I hope may do better next season.

These attractive little members of the Ringneck family have always



been avicultural rarities, partly, no doubt, because of their restricted range, which is confined solely to Ceylon. As far as I know, they have only once been bred in this country.

The "hen" of a "pair" of Plumheads eventually turned out, as so often happens with these birds, to be a cock. Another one, however, obtained at the same time, is definitely a hen, and this is fortunate, as she is mated to our matchless little cock lutino Plumhead. With his particularly rich yellow body colour; head like deep rose velvet; and small bright scarlet wing-patches, I think I have never seen a lovelier little bird of any kind, nor a more perfect specimen, and I only wish that Plumheads were not at the best of times such very shy breeders.

The lutino three-quarter Alexandrine, whose grandparents were a cock Alexandrine mated to a hen lutino Ringneck, has improved out of all knowledge after her last moult, and is mated to a particularly fine young normal green Alexandrine, bred by one of our members, Captain Veitch, in whose aviaries I think her grandfather was also bred. Originally she did not seem to make the progress she should, and I eventually discovered that she was being badly bullied by her brother who, not being a lutino, doubtless has better sight than hers. I cannot ever recall a similar case of bullying among parrakeets, still immature, that were members of the same brood—in this case, too, just a single brother and sister.

A few Bourkes were bred, and Elegants, but the most satisfactory Grass Parrakeet result was the rearing of nineteen young Turquoisines. The building up of a breeding stock of these beautiful little parrakeets has been a rather long and laborious process, as we started a few years ago with an imported nucleus consisting only of one pair and an odd cock. This, however, is much better than just a single pair, as one can at any rate hope to breed a mate for the odd cock, and as their progeny can then be mated back to those of the original pair one does not have to resort to direct brother to sister in-breeding.

A cock Elegant mated to a hen Turquoise reared three young ones, a hen and two cocks. Like most hybrids they are fine specimens and the cocks are distinctly handsome, being like very brightly coloured Elegants with a quite vivid orange patch on the belly and the suggestion of a red shoulder patch.

Two pairs of Splendids, obtained from a Welsh breeder, failed to propagate their kind owing to an excess rather than a lack of zeal. Both hens took at once to their nest-boxes, and were only seen again when they had been practically crowded out by their own eggs—the two boxes being found to contain no fewer than thirty-one eggs between them!

Our old breeding pair of Pileated Parrakeets had a brood of three, making twenty-two young reared since they have been at Keston.





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[Alec Brooksbank

MALE ALEXANDRINE × LUTINO RINGNECK HYBRID.

(This bird, mated to a pure Alexandrine hen, was the father of the lutino three-quarter Alexandrine.)

To face p. 46







A brother and sister pair of their progeny reared a brood of four of excellent size, but they were badly plucked in the nest. Another couple of the old pair's young ones I had kept, hoping they would prove a pair, turned out to be two cocks.

A fine pair of Browns bred at Woburn, and which we have had for some years, again did nothing beyond pretending they were going to breed when they were first given their nest-box, but a sister of the hen's mated to a cock Golden-mantled Rosella, reared a handsome brood of four young hybrids.

A number of Golden-mantled Rosellas and Stanleys were bred, and a young cock of the latter species is of particular interest, as he is what I believe is known as a "dilute"—that is to say in appearance he bears the same relationship to a normal Stanley as a silver Zebra Finch does to an ordinary one. I have never seen one like him before, and he is distinctively attractive, the red being the usual bright red though of a slightly lighter shade, while the green is much paler than usual, with a yellowish hue, and the mantle is only faintly marked.

Two pairs of Meally Rosellas were obtained too late in the year to breed.

An adult pair of Princess of Wales did not go to nest, while a young hen bred in Wales and mated to an imported adult cock, behaved in a most disappointing manner. She went into the nest-box and prepared it for the reception of eggs, after which she retired into the shelter where she laid a full clutch of eggs from the perch—all of them smashed, of course. She then once more entered the nest-box and, as the late Duke used so aptly to put it, proceeded to incubate the abstract idea of eggs!—and she subsequently died.

A young pair of Manycolours did not go to nest, and a cock Hooded Parrakeet shared an aviary with a hen Turquoise, but her eggs as one would expect, were clear. He is now with a recently obtained hen Manycolour with whom he is very pleased, and I hope they may rear a brood of synthetic Paradise—almost, I believe, indistinguishable from the genuine article—and a cross which the late Duke was hoping to obtain from this actual bird, at the time of his death.

A number of Redrumps were reared, mostly greens, but a few yellows as well.

Our parrot population consists of a female Yellow-fronted Amazon whose elderly husband recently died; two Blue-fronted of doubtful sex, as well as a pair, the hen of which (bred here before the war) reared a brood of four a few years ago when mated to a former husband who has since died; four Cuban Amazons too young as yet, I think, to breed; several Greys; a Senegal; and finally a very small Amazon bought several years ago from a local pet shop, and which I still find hard to identify with certainty, though I think it must be the All-Green from Jamaica.



A loss which caused me the maximum amount of regret was the escape of a particularly fine and certain cock African Grey Parrot. He and the hen were obtained as grey-eyed young ones during the brief lifting of the parrot ban, and had developed into a really splendid and very devoted pair which, incidentally, should have been about ready to breed next season. The great thing about them was that they were young, and had never been spoiled for breeding purposes by caging, and they were consequently the most promising couple.

They had been moved into a new and longer aviary, and, unobserved, had bitten two holes in the roof of the flight, although it was made of brand-new half-inch mesh netting. Both were in the aviary one afternoon at 3.30, but by 4.30 the cock had completely vanished and has never been seen or heard of from that day to this, despite the offer of a substantial reward to anyone returning him alive. It is, of course, almost unheard-of for a mated cock parrot at liberty to desert his hen if she is still in the aviary, and this bird's complete disappearance will always remain to me an unsolved mystery.

I was afraid that we should be left with a hen Grey in breeding condition, and nothing to mate her to, but by a great stroke of luck we were recently offered *two* cock Greys.

This seemed altogether too good to be true, and we wondered if they would really turn out to be cocks. However, as soon as they were out of their travelling boxes it was obvious at once, from their large heads and massive legs and feet, that they were indeed two cocks.

They are promising specimens for breeding purposes, as they are not tame, have certainly not been caged for long, and I should say are wild-caught adults.

Late last autumn we obtained two more Greys that proved to be the typical tame hand-reared grey-eyed youngsters which it is a great temptation to make pets of!

They were sold as a pair, but although one is slightly larger and more masculine-looking than the other, I have an idea that they are really both hens. If they are our stock of African Greys now consists of two pairs and a spare hen.

A pair of Roseate Cockatoos, the hen of which was bred here some years ago, reared their usual annual brood of three—two hens and a cock, and we kept the young pair to increase our stock, and hope to obtain unrelated mates for them.

A fine male Citron-crested Cockatoo remains unmated. I doubt if we shall ever get a hen of his own kind for him, which is a pity, as they have never been bred, but failing that, a hen Lesser Sulphur-crested would be the next best thing, and I should be very glad to hear from anybody who has one for disposal. They can be sexed by the eye-colour; the cock's being almost black, and the hen's brown.



A fair number of Cockatiels were bred.

As to lovebirds, we have Fischer's and both green and blue Masked, and as usual with the spectacled lovebirds, they proved difficult to sex with certainty. Broods of both species were reared, however, as well as some young from a blue Masked mated to a green. Pairs of Peachfaced were obtained too late to breed.

Many thousands of Budgerigars of all colours were bred, and the demand for rainbows—a very beautiful colour variety which originated here during the war, proved to be world-wide. In addition to the Continent, they were exported to India, Japan, South Africa, Canada, and America ; in the case of the last two countries, of course, in small quantities, as only a few can be taken in personally by aviculturists.

The only Grass Finches we put up to breed were Gouldians, and a small stock of these did quite well, rearing about a dozen young ones. Other finches reared included normal white, silver, fawn, and chestnut-flanked Zebra Finches, as well as a few Saffron Finches and white Java Sparrows.

Several of the very handsome Australian Crested Bronze-winged Pigeons were bred and also some Necklace Doves.

Two pairs of the pretty little Cape or Namaqua Dove which, except for its longer tail, is scarcely larger than a Diamond Dove, although in excellent feather, failed to come into breeding condition which, considering the vile summer, was hardly to be wondered at. I have an idea that a really prolonged spell of hot weather would be necessary to bring these attractive little doves into breeding condition. They have the reputation of being lethargic aviary inhabitants, but I noticed that they became considerably livelier on the rare occasions when we had a few fine sunny days.

Recent additions of the dove population include a pair of Triangular-spotted Pigeons, a pair of Indian Green-winged Doves—beautiful but desperately wild—and also a pair of the very lovely little Australian Plumed Ground-Doves. These doves belong to the genus *Lophophaps*, and I think I am right in saying that there are only three species, namely *plumifera*, *ferruginea*, and *leucogaster*.

Our pair are of the latter race or species—the White-bellied Plumed Ground-Dove—and I am not certain whether *plumifera* and *ferruginea* have ever been imported. In any case, even the White-bellied, which has the widest range of the three, is seldom obtainable, and always expensive to buy.

They are being wintered in a large cage in a heated birdroom. As one would expect from their purely terrestrial habit, they never perch, but spend all their time on the floor of the cage, which has a thick layer of peatmoss upon which they are periodically given a small square of turf. We shall try and give them an aviary in which they are the only ground birds, because although they look so small and



harmless, they are said to bully other ground birds such as quail, etc., and also to persecute their own wives.

They inhabit rather barren and very hot parts of Australia, and delight in sun-bathing on rocky ledges. We propose to let them share an enclosure with a pair of Elegants which are in one of our terrace aviaries facing due south in a very sheltered position. As they hardly ever fly, they will not interfere with the Elegants at all, and we propose to put a layer of sand over half the flight and at the back of it construct a miniature rockery of flat slabs of stone on which they can sunbathe—provided there is any sun to bathe in! It will not be necessary to supply any nesting receptacle as they are so truly terrestrial that their nest merely consists of a shallow grass-lined depression in the ground.

During the spring we received two birds which we have never previously had at the farm. They were sold as Yellow-headed Troupials and Military Starlings, but on arrival turned out to be two kinds of Marsh Bird, namely the Yellow-headed (*Agelaius icterocephalus*) and the Red-breasted (*Leistes superciliaris*). Both have a simple but striking colour scheme, the former being jet-black with a lemon-yellow head and a small black area round the eye, while the latter are dusky black with the upper half of the breast bright crimson. Temperamentally, however, they are very different, the Yellow-headed being an extremely active aviary inhabitant with a cheerful ringing “Plink . . . plink . . . plink-plonk-plink” call-note which is frequently uttered, while the Red-breasted proved silent and lethargic, though possibly they would liven up a bit in a spell of really hot weather. Also they spend most of their time on or near the ground, so that one sees little of the bright crimson of their underparts. Both species proved partly insectivorous and partly seed-eating.

A pre-war enclosure containing a pond has recently been roofed over, and is now a really large aviary about 70 feet long by 20 feet wide, by 12 feet high. During the past summer this contained among others Scarlet Tanagers, Giant and Jackson's Whydahs, Shamas, Red-breasted Marsh Birds, Black-headed Orioles, Spreo and Purple-headed Glossy Starlings, Necklace Doves, and Australian Crested Bronze-winged Pigeons. Both the last named successfully reared young. Most of these birds are spending the winter in a smaller aviary with a heated shelter, and will be put out again next spring, when we hope some of them will breed. Most of them were newly imported, and, of course, the more difficult breeders seldom make any attempt to go to nest until they have been in the country for at least a year.

The Spreo Starlings are of considerable interest. They were obtained from the Continent simply as “Spreos”, which we naturally assumed to be the most beautiful and at the same time most freely imported species—namely the Superb Spreo (*Spreo superbus*). On arrival they were very dull-coloured, being simple dark bluish-green, with a



greyish crown of the head ; the lower breast and belly dark chestnut some creamy-white on the inner webs of the flights and hardly any metallic gloss on the plumage. They looked, in fact, like young birds not yet moulted into adult plumage ; and this is what we assumed them to be.

We have now, however, had them for the best part of nine months, and although they have done a complete moult, their appearance has not changed at all, so it seems certain that they are actually not *superbus*, but the Beautiful or Chestnut-bellied Spreo (*Spreo pulcher*)—ranging across Africa from Eritrea to Senegal, as they tally exactly with Bannerman's description of this race in vol. 2 of his *The Birds of Western and Equatorial Africa*. He describes their nesting arrangements, and it is interesting to note that they construct a sort of outsize Weaver's nest—spherical and made of grasses with the entrance near the top, and placed in a bush—as I had imagined that all starlings nested in a hole of some kind, either in a tree or building.

Ours are, judging by their behaviour, an obvious pair, and have been seen carrying nesting material, and as I doubt if this race has ever been bred, we hope to have a shot at it next season. Although they have the intelligent attractiveness of all the Starling family, it is difficult to see why they were called "The Beautiful" since, judging by descriptions of the others I have read, I should say that they are probably the least beautiful of all the Spreo group.

Perhaps the Purple-headed Glossy Starlings were the most spectacular, as they made full use of the great size of the aviary and looked really magnificent in flight with the sun—on the few occasions when it consented to shine—glittering on the ever-changing hues of their brilliantly-metallic plumage ranging through green and blue to purple. Their flight in a really large aviary was interesting, starting with powerful wing-beats and ending in a glide before alighting. . . . So, too, was the flight of the Crested Bronze-winged Pigeons which is swift and powerful, with the tail momentarily raised high over the back on alighting. Their wings make a quite loud whistling sound in flight.

Among permanent residents in the aviary are Mandarin and Carolina Ducks, Oystercatchers, and Ringed Plover—the latter a trio of doubtful sex, though probably all cocks.

The Mandarins and Carolinas came from Woburn, and were very kindly given to me by the late Duke of Bedford shortly before his death. Although they are full-winged, they hardly ever fly except when having fun and games in the spring. Then they sometimes take off, and after flying low for a short distance, land on the pond with a splash.

The Oystercatchers are particularly beautiful in flight with their black wings so strikingly barred with white. In addition to their



attractive appearance they are lively and interesting aviary inhabitants, forever examining and probing into everything with their long slender bills, and they make full use of the miniature shingly paddling beach which our General Manager, Mr. W. D. Cummings, under whose care they are, has fixed up for them at the shallow end of the pond. Here they probe and bathe to their hearts' content, as do the Plover, though these are chiefly interesting in bathing. The Oystercatchers' lovely wild whistling call is sometimes heard during the day, but chiefly at night when the moon is up.

When they first arrived they were somewhat lame, and their normally orange-yellow beaks were almost black, and rather brittle. Now they are in lovely condition with the colour back in their beaks, and have fully repaid Mr. Cummings for the care he has lavished upon them.

They seem to like a varied diet, including insectivorous mixture, bread and milk, and, much to my surprise, groats and wheat, as they are about the last birds I would have expected to eat hard corn. Perhaps their favourite food is live gentles, of which they have a generous daily allowance. They also eat snails, and are very fond of shrimps and cockles, which they are given every other day. Cockles are, of course, one of their chief items of diet in a wild state, and I have often wondered why these birds were given a name which suggests that they spend their time rushing madly about trying to catch the nimble oyster !

The Ringed Plover are most attractive and dainty little waders to have in a suitable aviary, and require the same diet as Oystercatchers, with the exception, of course, of corn, and I have never seen them tackle shrimps, though they will eat cockles.

Our two other large planted aviaries contained a rather miscellaneous collection of birds, including Crested Bronze-winged Pigeons, Necklaced and Cape or Namaqua Doves, a couple of cock Short-billed Minivets, Napoleon Weavers, Grenadier Weavers, Goldfinches, two cock Yellow-headed Marsh Birds, Saffron Finches, Giant Whydahs, Lavender Finches, and finally a couple of Grey Singing Finch  $\times$  Canary hybrids—most beautiful songsters. Young were reared by the Crested Pigeons, Necklace Doves, and Saffron Finches.

One of these aviaries contained a pair of pure-bred Amherst Pheasants, and the other a trio of Goldens, the cock of which was still in immature plumage. The Amherst's eggs were placed under one of the Golden hens, and several chicks hatched, which she successfully reared without any trouble in the same aviary as her sister and the immature cock, just brooding them at night in whatever part of the aviary she fancied—usually under a thick elder bush.

Perhaps the most rarely imported birds on our farm are four species of South African Warbling Finches of the genus *Poospiza*,



namely: The White-throated (*Poospiza melanoleuca*), the Chestnut-and-Black (*P. Nigro-rufa*), the Pretty (*P. ornata*), and the Ringed (*P. torquata*).

Only the Pretty is at all finch-like, resembling a miniature Chaffinch of rather cinnamon colouring, while the White-throated and the Ringed remind one respectively of a small Cole Tit and a miniature Pied Wagtail. The handsomest of the four and also the best songster is the Chestnut-and-Black, which in addition to these colours has areas of pure white and dark slate-grey in its plumage.

Mr. Yealland tells me that the London Zoo has never had a specimen of the Ringed, so it seems probable that ours are the first ever to be imported into this country.

Although the birds of this genus have been called finches, it is a rather misleading name, and I doubt if any of them would live for long on the normal finch diet of seeds and green foods. It is true that ours eat a certain amount of seed, but they are also given insectivorous mixture, bread-and-milk, and gentles, all of which they eat with relish, and some appreciate a thin slice of apple pushed through the wire netting close to a perch.

We only ever had one White-throated Warbling Finch, which we eventually parted with as there seemed no chance of ever getting a mate for it.

Of the other three species, the pair of Ringed were given an aviary to themselves. This faced due south, and had a tangle of wild clematis growing up the back, in addition to which a bundle of gorse was nailed up under overhead cover in a secluded corner. The birds themselves were in perfect condition, and I am sure the fact that they made no attempt to go to nest was due to the wretchedly cold and sunless summer.

The Pretties and the Chestnut-and-Blacks shared a large planted aviary with various other birds, including the pair of Amherst Pheasants.

The hen Chestnut-and-Black, although she had a perfectly good husband of her own, perversely mated herself to one of the three Pretties (of whose sexes we were uncertain), and constructed a typical cup-shaped finch nest high up in a bush. This, however, was later found destroyed, possibly having been crash-landed upon by the hen Amherst, who was rather inclined to fly up wildly when she was being too hotly pursued by her husband. This, incidentally, is a disadvantage with pheasants in an aviary containing small nesting birds.

The three Pretty Warbling Finches were then transferred to another planted aviary and nested, and I think the hen started to sit. Here again, however, the nest came to grief—this time possibly destroyed by a pair of Saffron Finches who became very aggressive to all and



sundry when they had young in the nest, or else again by a pheasant landing on top of it, as there was a trio of Golden in the aviary.

However, we still have the Ringed, the Pretties, and the Chestnut-and-Blacks, all wintering together in an aviary with a heated shelter, and shall try next season to give them all aviaries to themselves, as—except for the odd stroke of luck now and again—I never think much in the way of breeding results can usually be expected in a mixed collection.

\* \* \*

## NOTES ON EUROPEAN WILD PIGEONS

By DEREK GOODWIN (Virginia Water, Surrey, England)

This article has been written in response to a request for some information on European wild pigeons.\* With these as the central theme, I have also ventured to deal with some aspects of general interest to pigeon-watchers or pigeon-keepers, and to a large extent equally applicable to birds of this group elsewhere. I have not discussed the feeding-behaviour at any length, since so far as I know it does not differ in any essentials from that of the Feral Pigeon (Goodwin, 1954) except in the case of the Woodpigeon. This species has a special movement (Heinroths, 1926–7) for plucking berries, buds, etc., and probably also has innate reactions enabling it to recognize certain tree-foods.

There is much difference of opinion as to whether such names as Stock Dove should be written thus, or as Stock-dove, or Stockdove. I have no strong opinion on this matter, and if in this paper I have used the last form most often, it is simply due to the greater ease of typing it so.

I have used the now popular English names, but it should be mentioned that in bygone days the Woodpigeon was known as Ring-dove and still is in some bird-books. It is the Cushat of the Scots. In many poems by different authors, the term “Stockdove” almost certainly refers to this species. The Stockdove itself is locally known as Rock Dove or Blue Rock Pigeon, causing confusion with *Columba livia* which is properly so-called.

### *Some behaviour patterns of breeding pigeons*

In this section I propose to describe, and where necessary, briefly discuss, some characteristic forms of behaviour that are—with the possible exception of driving—common to all the European species

\* I have used capitals for species names. Where I have used the word “pigeon” or “dove” uncapitalized, it is used as a general term to cover any or all of the *Columbidae*.

The line sketches are merely to give a general impression of the subject and have no pretention to art or detailed accuracy.



and to most other pigeons as well. These behaviour patterns are all characteristic of some stage of the breeding cycle, although in the case of display flight and the bowing display by no means rigidly confined to it. Specific differences in the bowing display and display flights are described briefly under the species headings, and will not be discussed here.

### *The Bowing Display*

In this the displaying bird, facing (or walking around) the object of its display, lowers its head, utters a characteristic cooing, and by special movements or erection of feathers exhibits the display markings on neck, wings, or tail. Contraction of the pupil usually takes place. This display differs greatly in detail from species to species, the bow may be rapidly repeated as in the Turtledove, slow and deliberate as in the Stockdove, it may or may not involve the presentation of wings or tail. Always it is frontal when at full intensity, although a tendency to flee from the object displayed at, or the latter's moving away from the displaying bird, may at times prevent this from being immediately obvious. The bowing display is always self-assertive in character, but is usually only shown when the bird is, to some degree, sexually motivated. In doves of the genus *Streptopelia* it seems to be mainly sexual. In the Rock Pigeon and the Speckled Pigeon (*Columba guinea*) low intensity forms of this display may be purely threatening or defensive.

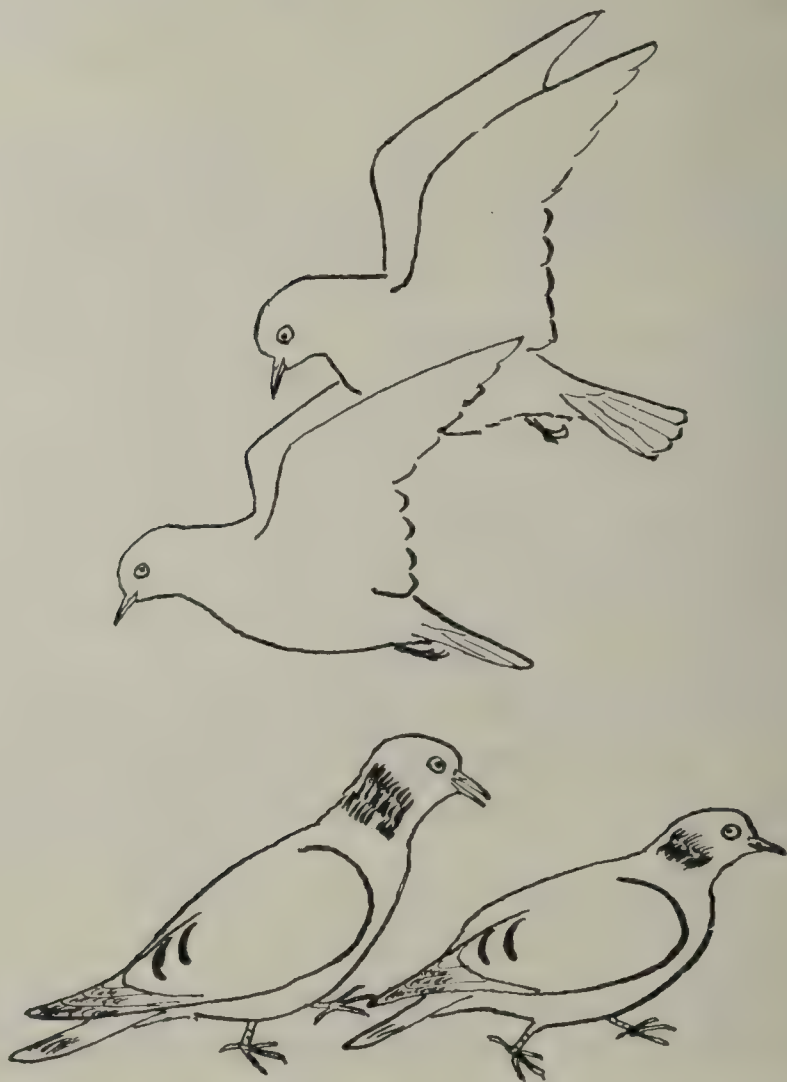
### *Nest-calling*

This is the term commonly used for cooing given by a pigeon, eager to begin nesting, at a potential nest-site. When such a bird has discovered a suitable place it adopts a crouching posture with tail and rump somewhat raised, lowers its head, and utters a characteristic cooing which is, in many species, very similar to the ordinary advertisement "song". Twitching of the folded wings and nodding of the head usually accompany this. Both sexes nest-call, but commonly the male initiates such behaviour and shows it at higher intensity than the female. Lone pigeons—especially solitary confined birds in full reproductive condition—may nest-call, but usually this behaviour is only indulged in when the mate is near by, and the latter normally soon joins the nest-calling partner. Mutual fondling and calling on the nest-site then follow, at any rate if the female approves of her mate's choice, as she usually does. Whilst thus on the site together, the pair seem to be in an absolute ecstasy of mutual affection, and this behaviour probably functions to forge a strong emotional bond between newly paired birds, as well as reinforcing such a bond in older pairs. It is repeated at subsequent visits to the nest-site, but the nest-calling and mutual ecstasies soon largely give way to nest-building.



*Driving*

In the Rock Pigeon (and its domestic descendants) and the Stockdove this is commonly seen for several days prior to the female laying the first egg. Her mate follows her wherever she goes, pecking, usually



Male Stockdove driving his mate (a) in flight, (b) on ground.

quite gently, at the top of her head. The intensity of driving varies greatly. Some male Domestic Pigeons give neither their mates nor themselves any rest at this period, others only drive intermittently and in a half-hearted manner. The male Stockdove is said (the Heinroths, 1927-8) to strike his mate fiercely with his wings when driving. This I have not yet seen, and I suspect the statement—which the Heinroths give second-hand—is based on the aggressive encounters of cock and hen Stockdoves in the early part of the nesting-cycle being mistaken for true driving. If the driven female goes to the nest-site she is chivvied no further.

It is commonly supposed that the driving male is deliberately trying to force the female to go to the nest-site. The Heinroths (1949) on the grounds of their long experience with Domestic and Rock Pigeons, consider this so. I am inclined to doubt it. Although the male stops



driving if the hen goes to the nest, his driving does not appear to induce her to go thither. So far as I have seen, the male never drives when the pair are isolated from others of their kind, even if they are at full liberty. The stance adopted by the driving male and his apparent visual fixation on the female's head are suspiciously suggestive of his normal behaviour immediately prior to and during copulation. Furthermore, it sometimes happens (the Heinroths, 1949) that the driven female will suddenly stop dead still and the mating ceremonial follows. These facts make one suspect that the causation of the male's driving might be in a desire for coition. But such a theory is difficult to reconcile with the lack of driving in isolated pairs. That, as Whitman (1919) suggested, the sight of other pigeons near by arouses in the male a feeling of jealous possessiveness towards his mate, and this emotion elicits the driving, would fit the observed facts, but it is difficult to prove or disprove. I have not seen driving in other species, with the possible exception of the Barbary Dove, and in this species too I have only seen it when others were about. The male Barbary Dove shows more aggressiveness, or at least shows it more obviously, and I am not at all sure his behaviour is really homologous with that of the Rock Pigeon and Stockdove. Still less am I convinced that this is the case with various reports of driving in other species that I have heard and read. In some, at least, the observer may have been mistaken, as I now think I was over my Laughing Doves (Goodwin, 1947), and misinterpreted aggressiveness for true driving.

Turning now from the motives activating the driving male to the biological function—if any—I can only think of two that seem even faintly plausible. Driving might prevent the hen from being fertilized by another male. That the hen at this stage shows no sexual interest in strangers if her mate is present does not absolutely nullify this hypothesis, since such indifference on her part might have co-evolved with masculine jealousy. Secondly, if such behaviour on the part of the male actually does make the female spend more time at the nest-site, then it might be of use in connection with nest-building (q.v.) or protection of the nest from strangers. The Heinroths (1949) show that driving occurs most intensely in young pairs or in birds nesting at a new site, and conclude that its function is to impress (presumably on the female) the whereabouts of the nest-site "dass ein Einprägen des Nistortes bedeudet". This I find difficult to reconcile with the fact that a lone pair of Domestic Pigeons do not drive even under such conditions. Also it seems unlikely that the hen needs "reminding" of the nest's whereabouts. The excellent memory of a hen pigeon for any place whither she has gone in company with her mate and indulged in nest-calling with him, is easily proved by means of a hand-reared hen Domestic Pigeon "paired" to her owner.



*Nest-building*

In the European species—and all other pigeons for which nest-building has been described—the male collects the material and the female builds the nest. In the Domestic Pigeon (the Heinroths, 1949) and perhaps in other species, the female may bring a few twigs, but her contribution in this way, presuming her to be heterosexually paired, is negligible. The chief stimulus eliciting the collection of nest-material in pigeons is the mate sitting on the nest-site ready to build. In normal pairs the builder is always the female and the collector the male. If, however, a hen pigeon receives the appropriate stimulus, as she will do if she is paired to another female, then she will show the otherwise masculine behaviour-pattern and seek for and carry material to the sitting bird. As with gulls and some other birds, nest-building in pigeons appears not to be fully emancipated from its (presumed) origin as a displacement-activity. If during incubation the female is at all reluctant to quit the nest when the male comes to take his turn, he will often go and gather a twig for the nest. My friend Mr. Bertram Stone, pointed out to me that this is particularly liable to happen—at any rate with Domestic Pigeons—at the moment that the young are actually hatching, when the female is often reluctant to leave them.



Male Pigeon (any branch-nesting species) giving building material to female. (For explanation see text.)

In tree-nesting pigeons the male always walks over, or alights on, the female's back, and presents the twig to her over her shoulder (see sketch). Leaving aside possible psychological implications, this behaviour may be of use in testing the strength of the growing structure which will later have to support the weight of both young and adult. Also in branch-nesting pigeons the siting of the nest might at times make a frontal approach difficult. The Rock Pigeon, Stockdove, and Speckled Pigeon also show a strong tendency to present nesting material to the female from behind, even although this is often difficult



to achieve if the hole or nook used is on the small side. This is an additional reason to those given by the Heinroths (1949) for supposing branch-nesting to be the primitive condition in the Columbidae and hole-nesting a recent development so far shown only in a very few species.

Most pigeons use twigs, dead roots, stems, and so on, for their nests. They avoid soft substances and choose twigs of a tough and wiry nature if possible. Hence if by chance it comes upon pieces of wire of suitable length these supply a "super-normal" stimulus to the material-seeking bird, and are taken eagerly. Hardly a year goes by without someone finding a pigeon's nest built entirely of wire, and announcing the fact in the press with many foolish comments about the bird's "abnormal" choice of material. The Woodpigeon gathers much of its nesting twigs from the tree, seizing the bare twigs and breaking them (if it is lucky) with a similar movement to that used when plucking berries or acorns. At times, however, it forages for material on the ground, as do all the other European species.

### *The European Species*

The Woodpigeon (*Columba palumbus*) is the largest, and in Britain the commonest, of the European wild pigeons. It is about the size of the average Homing Pigeon, with a proportionately heavier body, larger tail and shorter wings and legs. It is larger than most of the Feral Pigeons in British towns, but a good deal smaller than "show" specimens of most domestic breeds. In appearance few birds can surpass it. The general colour of the upper parts is soft grey, strongly tinged with bluish on rump and head, but less so on the wings. The breast is a soft mauve-pink (one of the many different colours for which most bird books use the term "vinaceous") shading to near white on the belly and creamy-grey on the flanks. There is a white patch on the wing which is conspicuous in flight. A white patch on either side of the neck is set off by an area of iridescent green just above it (see sketch). The bill is golden-yellow, with a white cere and pink gape-edges. The irides are pale silvery lemon or greenish-white, and together with the "spilt" appearance of the pupil (said to be due to its being pear-shaped, but looking as if due to a spot of blackish pigment adjacent to a spherical pupil) rather detract from its charms. Juveniles are duller and browner, with rusty fawn breasts, dark eyes, and no white on the neck. Most females have slightly smaller neck-patches and paler pink breasts than most males.

The Woodpigeon is found throughout much of Europe, western Asia, N.W. Africa, and some of the Atlantic Islands. These forms differ only slightly from that described. The other wood pigeons of the Atlantic islands, undoubtedly derived from the same stock, have now become sufficiently differentiated to rank as good species.



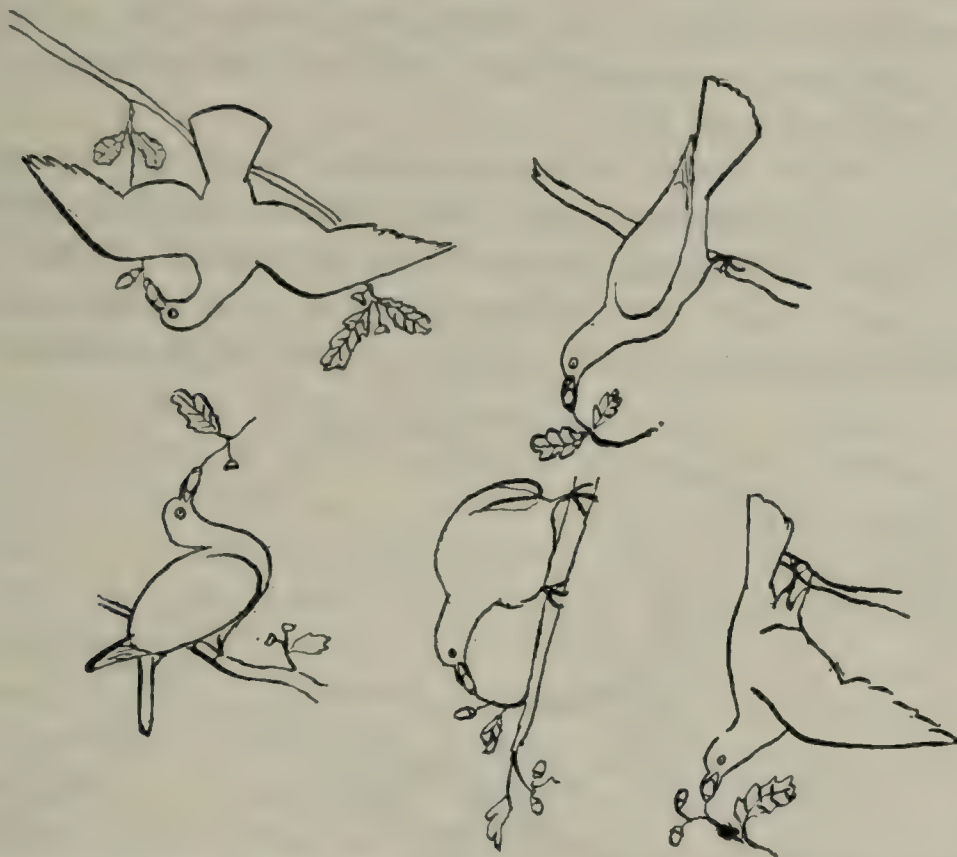
In some northern parts of its range the Woodpigeon is mainly or entirely a summer resident. Elsewhere it is sedentary or nearly so. It seems likely that most of the "extra" Woodpigeons coming into southern England in winter are from Scotland and northern Britain rather than overseas (see Colquhoun, 1951). Sportsmen often maintain that these "foreign" Woodpigeons differ from the English ones, oblivious of the fact that unless they had come from Asia or Africa they would not show any difference. Some of the descriptions of these "foreign Woodpigeons" that have appeared in the sporting press do not fit any species known to ornithology!

The Woodpigeon was undoubtedly a bird of the primeval European forests. It has, however, adapted itself well to the changes wrought by man, and is now common in wooded agricultural country, parkland, and even some towns, such as London and Paris. Colquhoun (1951) considers it as a bird of open country that nests and roosts in trees. In my opinion every detail of its form, deportment, and behaviour betray it as primarily a woodland bird. Heinroth (1926-27) remarks on its similarity of posture and movement to the Imperial Fruit Pigeons (*Carpophaga* sp.). Particularly revealing is the fact that when Woodpigeons feeding on the ground are disturbed (in open country) they almost invariably fly to the nearest trees (provided that these are at a safe distance from the enemy), whereas Stockdoves or Rock Pigeons feeding with them usually fly a short distance, or circle, and then drop at once to earth again. In the Orkneys the Woodpigeon has even adapted itself to nesting on the ground, but in most parts of Scotland it is noticeable that where there are few trees there are no Woodpigeons.

Although taking much of its food from the ground in the form of grain and seeds, fallen nuts and acorns, greenstuff and, I suspect, many forms of invertebrate life, the Woodpigeon feeds a great deal in trees and seems to do so by preference. It can cling and clamber among slender twigs with an agility surprising in one of its bulk. When feeding on growing acorns and berries it will often—when it can reach no more from branches that will bear its weight—hang head downwards, bracing itself with outspread wings against the foliage, in order to reach further supplies. Its arboreal habits tend in one way to increase its destructiveness since it will settle among and cling to growing grain, and after harvest prefers to alight on and feed from the stooks to gleaning from the ground. It is, however, probable that the damage it does has been somewhat exaggerated. A peculiar "anti-pigeon" cult has grown up in Britain, and as a result it is considered by many not quite "comme il faut" even to show an interest in pigeons, much less suggest that they may not be so black as they are painted. One of our leading ornithologists is never tired of declaiming that "A Woodpigeon is not a bird". "The only beautiful thing



about a Woodpigeon is the smack with which it hits the ground when you shoot it," and so on, *ad nauseam*.



Attitudes adopted by Woodpigeons feeding on acorns or berries when all the easily-reached ones have been eaten.

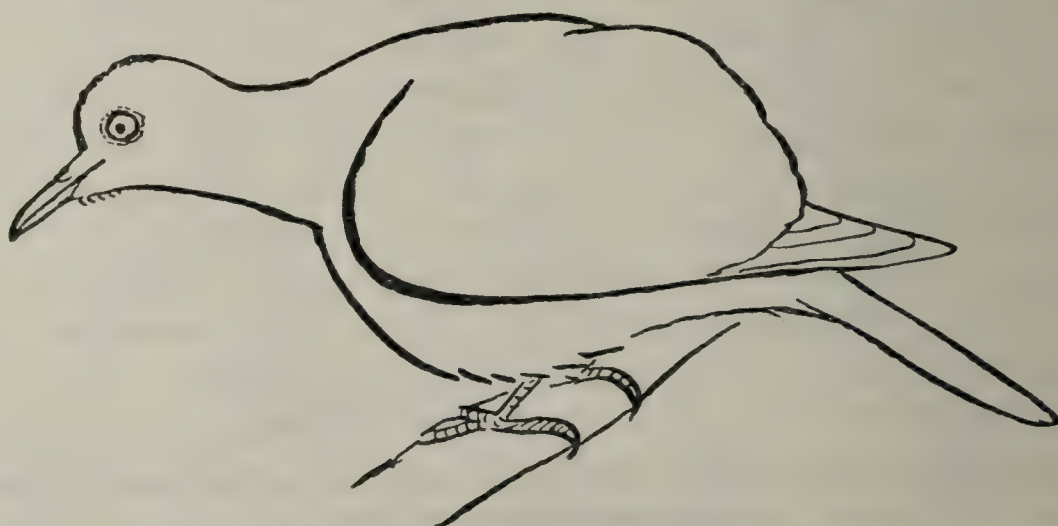
In any case it is extremely doubtful if the amount of corn that the persecuted and black-listed pigeons take from our fields exceeds the amount given—in the form of bread—to the favoured and legally protected garden passerines. The latter are therefore just as harmful to the national economy. It might also be mentioned that at times of caterpillar abundance, Woodpigeons often feed eagerly on these larvae.

The Woodpigeon feeds a great deal on greenstuff, taking the buds, young leaves, and flowers of many trees, as well as leaves of clover, cabbage, dandelion, and other plants. Such foods, perhaps particularly the leaves of cabbage and kale, are relatively low in food value, and seeds and berries are usually preferred if available. Kale in particular seems to be a stop-gap if all else fails, and it is usually only in heavy snow or after a very bad acorn and beechmast crop that Woodpigeons damage it seriously. Some country Woodpigeons, and most London ones, rely to a great extent on greenfood even in the spring and summer. I have noticed, however, that the London Woodpigeons, when feeding on tree buds, usually have a near empty crop most of the day, and then eagerly search for bread (and, I think, some forms of invertebrate life) on the ground, and in late afternoon or evening fill their crops to capacity with the easily obtained but probably less valuable tree-food. A pair of Woodpigeons that visited



my garden last summer fed first on young cabbage leaves, then completely stripped three blackcurrant bushes of the ripe fruit, but did not sample the wheat I put down for them. This suggested that they had never eaten grain before, and had no strong tendency to investigate seeds of such size.

In inner London many of the young Woodpigeons get into a pitiable state of starvation when first cast off by their parents. At such times their first food seems to be greenstuff taken from the ground. I have often seen them so weak that they tottered and stumbled when they moved, yet able to fly up to the shelter of a tree



Starving young London Woodpigeon sees food.

when alarmed. Young Woodpigeons at this stage do not seem usually to follow and "copy" adults as do young Feral Pigeons (Goodwin, 1954) or at least not to the same extent. One often sees them by themselves feeding, both in town and country, even when many adults are near by and at more productive feeding grounds. Perhaps the severance of family ties is accompanied by such aggression from the parents that the young are for some while chary of approaching adults of their kind?

Certainly the breeding adult Woodpigeon is territorial and fiercely aggressive to others of its species. This aggression does not prevent many pairs from nesting quite near to each other, but as can be seen in the London parks it causes constant chasing and quarrelling. Often the birds appear to be trying to drive others away from food, but this is almost certainly not the primary cause of their anger, as when not in reproductive condition they do not do this, even though food may then be scarce. Also, although the aggressive (presumed) territory owner flies furiously at other Woodpigeons that are trying to share the food some person is giving them, it ignores the Feral Pigeons which are meanwhile getting the lion's share of the food. The very great concentration of Woodpigeons' nests in some conifer plantations may imply a lessening of aggressive and territorial



behaviour on the part of their owners. I think, however, that the reason is rather that among the dense conifers the birds are not constantly aggravated by the sight of their next door neighbours, and also in these areas they feed well away from the nesting place, whereas the London birds are constantly being tempted to "trespass" when food is being doled out in a territory.

The Woodpigeon normally nests in trees, although in towns quite often on ledges of buildings. Some horizontal, or nearly horizontal support, preferably also with some support to one or more sides, and well screened by vegetation, is the kind of site typically chosen. Early nests are thus most frequently placed in conifers, or other evergreens. London Woodpigeons, either through lack of alternative sites or of predators or both, often nest in full view in completely bare trees. The nest is the usual flattish platform of twigs, apparently flimsy, but in fact often strongly interwoven, built by most tree-nesting pigeons.

The advertisement "song" of the Woodpigeon is a musical "coo-coo, coo-coo, cuk". Usually the phrase is repeated from two to five times, but usually ends on an abrupt "cuk". A hurried, jumbled, indistinct version of this is given when bowing in display, and when nest-calling a deep, strained groaning note, usually disyllabic, is uttered (Goodwin, 1948c). When bowing in display the Woodpigeon inflates its neck, increasing the extent of white and green. If perched, or standing still, the bow is accompanied by a raising of the tail, but if walking after another bird on the ground, the bowing position is adopted without tail raising. This latter is probably in origin a balancing movement, and is usually shown after alighting (see sketch).



Characteristic upward swing of Woodpigeon's tail a few seconds after alighting.

The display flight of the Woodpigeon is a most beautiful and breathtaking performance, quite impossible to describe adequately. The bird flies forward and up, suddenly inclines its flight upwards a little more steeply, gives one or (usually) more loud claps with its wings,



then sets them at or somewhat below the horizontal, glides forward and then somewhat downwards, often to rise and repeat the performance several times before re-lighting. This description sounds very commonplace, but the writer at least can never see the bird, just after the wing clap, appear to hang motionless for a second in the air and then shoot smoothly forward without feeling he has witnessed "something rich and strange", frequent though the sight may be. In low intensity versions no audible wing clap is made.

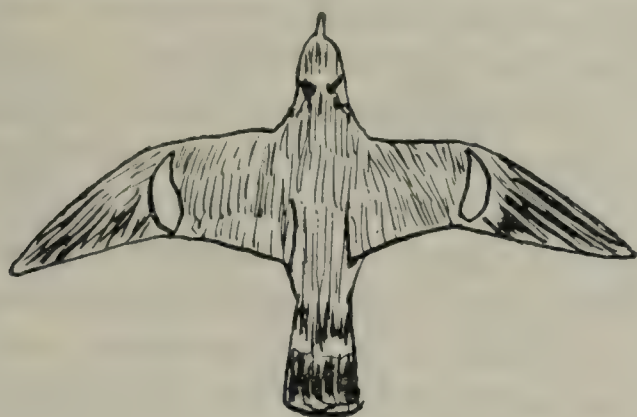
Young Woodpigeons are easy to hand rear, and if really tame make delightful birds in a large aviary. If young Woodpigeons are hatched and reared under domestic pigeons they are said often to die at about six days old (Heinroth, 1927) due, it is thought, to the hard grain fed them by their foster parents. I have myself twice so reared broods of Woodpigeons successfully, but in each case the parents were at full liberty, and fed largely on wheat, not on the peas and beans usually given. Through a variety of mishaps, and mainly through neglecting opportunities, I have never had a tame breeding pair of Woodpigeons, so cannot speak personally of them in this respect. But the species has often been bred, and hybrids with Domestic Pigeons, and at least, once with the Stockdove, have been produced. Some Woodpigeons stay quite well if given liberty. I have lost many that I reared as a boy, but chiefly, I think, due to my own folly rather than the birds'. Three that at different times were staying well were all killed by Sparrow Hawks. In each case the hawk took the Woodpigeon, although dozens of Domestic Pigeons were in its immediate vicinity. One bird that was "imprinted" on Domestic Pigeons (Goodwin, 1948a), stayed for several years until in the end he met the inevitable sportsman, the ultimate fate of almost every large or brightly coloured bird allowed its liberty.

A pleasant little story that I have heard apropos of the tameness of the London Woodpigeons seems worth repeating here. An old Scottish keeper who had never travelled far from his home was—for some reason or other—taken by a well-wisher on a visit to the Metropolis, and shown all the sights. On his return he was asked what he thought the most wonderful thing in London. Without hesitation he replied, "To see a Cushat feeding out of a man's hand!"

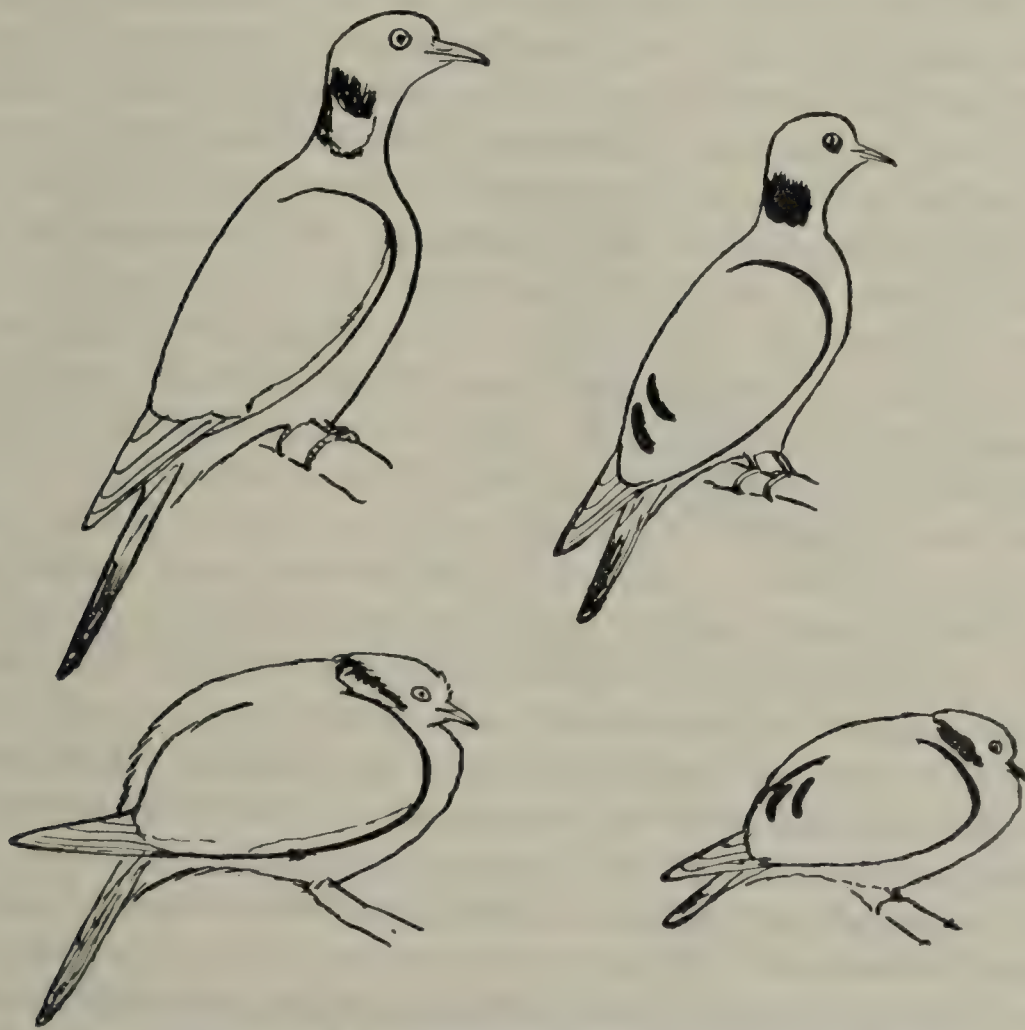
The Stockdove (*Columba ænas*) is smaller than the Woodpigeon and most Domestic Pigeons, but larger than the Turtledove. It is plumper and more compact in outline than the other species. It has two short inconspicuous black wing bars (sometimes a vestige of a third) and the blackish ends of its wing quills are conspicuous in flight, when the slightly paler central area of the wing (see sketch) may appear almost white in bright sunlight at some distance. On either side of the neck there is a patch of iridescent green, shot with amethyst, this patch usually extends more or less round the back of the neck also. The



breast is a soft glossless mauve-pink, this colour, despite the bird's scientific name, being less pronounced and extensive than in the Woodpigeon. The bill is dull yellowish and pinkish—appearing all pale flesh-pink at a little distance—and the legs and feet pinkish red.



Woodpigeon (upper) and Stockdove, as seen in flight from above. The unshaded areas are white in the Woodpigeon, pale grey in the Stockdove. (See text.)



Woodpigeon and Stockdove alert (upper) and at rest.



The irides are dark brown, giving the eyes a melting, gentle expression that belies their owner's character. The young are duller, with dark bills and feet, little or no gloss on the neck, and rusty fawn breasts. Most female Stockdoves are a duller blue-grey than the males, and often have a dusky tip to the bill and less clearly red feet. The young in first plumage show a similar sexual difference, and the young cock's feet and bill start to change colour before his sister's.

The Stockdove is found throughout much of temperate Europe and Western Asia, and locally in north-west Africa. It is difficult to imagine what sort of country the Stockdove originally inhabited. Possibly it was a bird of the forest-edge or of large forest clearings. It has almost certainly spread as a result of man's activities, and has in the past century increased its range and numbers in Britain and other parts of western Europe. Where circumstances permit the adult birds, at least, are resident, but in some of its breeding haunts it is a spring and summer visitor. Judging by ringing returns (Witherby, *et al.*, 1940, Delmee, 1954) the young are more prone to wander, or to migrate. In Britain the Stockdove seems to thrive wherever a fair amount of arable cultivation subsists and it can find a hole, preferably in a tree, cliff, or old building, but at a pinch even in the ground, to nest in. Parkland with old timber, inland cliffs, and derelict quarries near to cultivation usually support substantial numbers of breeding Stockdoves. Feeding is done almost entirely on the ground, usually in open fields, although the bird will sometimes feed (presumably on fallen tree seeds) on the ground in woods, and on the roadsides. The Stockdoves nesting in the Inner London Parks seem to fly right outside Inner London to feed. I have once or twice seen one or two on the ground looking for food in early morning, but this seems to be most unusual, and they do not come down when one feeds the Woodpigeons and Feral Pigeons in their sight. The Stockdove feeds on seeds, including those of vetches and many other harmful weeds, grain, pulse, small snails (probably also other invertebrate life), and green-stuff, the last not extensively except in time of dearth.

As has been said, the Stockdove prefers to nest in holes, but when these are not available, it will use the old nests of other species, or even nest on the ground among thick bushes. Records of Stockdoves building on branches are doubtless really cases of the bird using old Woodpigeon nests. Often hardly any nest is built, at other times a considerable amount of nesting material may be used. The Stockdove will use dead leaves as well as twigs, roots, etc., for this purpose. Two white eggs are laid, which take about 16 days to hatch.

The advertisement "song" of the Stockdove is a soft, musical, but emphatic "Oo-er-oo" with some variation of tone and modulation. The nest-call is similar. When bowing in display, with inflated neck and feathers of the green neck-patch erected, it raises and fans its tail



and utters a very soft droning coo, interspersed with a double click of the mandibles. The male Stockdove "drives" his mate when she is about to lay, in exactly the same manner as does *C. livia*.



Fighting Stockdoves, bowing display "between rounds".

It is colonial at least to the extent that several pairs will nest in the same old building (see Campbell, 1951), quarry, or belt of trees, if there are sufficient nesting holes. Over these latter there are often fierce and bitter fights. Stockdoves fighting over nest-holes go completely berserk. I once saw such a fight start between two pairs. For the first five minutes or so each bird fought both members of the other



Two pairs of Stockdoves fighting over one nest-site.

pair according to expectations, but thereafter they became so enraged that each fought whichever of the others was nearest to it, without discrimination. It seems that once it gets really "worked up" a fighting Stockdove is no longer capable of individual recognition, but reacts with aggression to the sight of any other of its kind. Often in early spring one comes upon two Stockdoves, nearly exhausted, pressing against each other and still dealing pecks and wing-cuffs. Subsequent watching may show that these are not only a cock and a

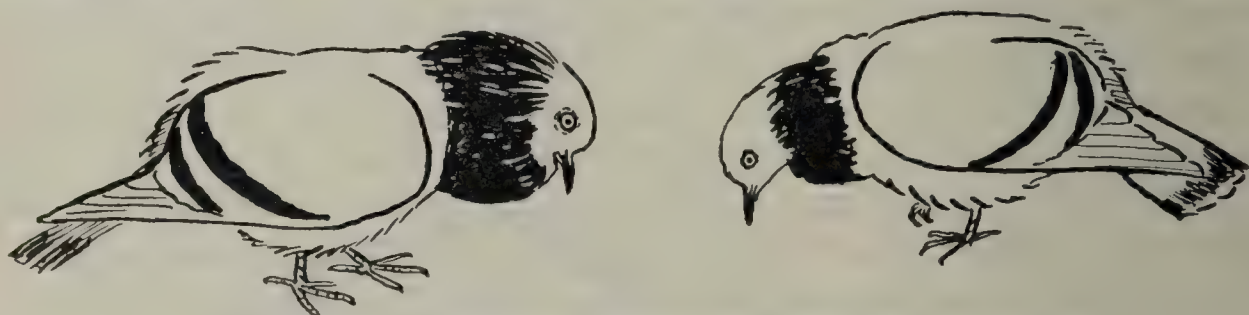


hen, but are actually paired. I suspect such incidents result from a two pair fight, the victors being left fighting each other after the "vanquished" have departed. That at least was the end of the fight mentioned above, the only one of which I have been fortunate enough to witness the actual start of hostilities.

Young Stockdoves are easily reared by hand. They will breed freely in captivity, but of the two breeding pairs I have kept one were apt to neglect their young in their eagerness to go to nest again. Most tame Stockdoves are good stayers when allowed their liberty. As they will nest in semi-darkness in boxes with a hole for entrance, it is possible to breed them in the same aviary as such birds as Jays, which is quite impossible with any branch-nesting species.

The display flight of the Stockdove consists of clapping and then gliding forward, much in the same manner as the Rock and Domestic Pigeons do, but less spiritedly. The wing claps are less loud, the wings do not seem to smite so vigorously or through such a wide arc, and the gliding is usually less prolonged.

The Rock Pigeon or Rock Dove (*Columba livia*) is the species from which all our Domestic and Dovecote Pigeons have originated. As a wild bird it is found from the Faeroes, Shetlands, Scottish and Irish coasts and the Atlantic Islands, east through the Mediterranean regions to Persia and India, and south to Senegambia, the Sudan, and southern Arabia. The form found in the European parts of its range is about the size of a Stockdove, or a shade larger, but appreciably smaller than most Domestic Pigeons. Its general colour is bluish-grey, palest on the wings which are crossed by two conspicuous black bars. The rump, or rather the upper part of it, is white, contrasting strongly in flight with the dark grey upper tail-coverts. The neck



Pair of Rock Pigeons in mutual self-assertive display.

and upper breast are iridescent green and purple, the feet and legs red or purplish red, the bill blackish, with a white cere, and the irides orange. The young are duller (see Goodwin, 1954, for details). The other forms of this species differ mainly in size (most are smaller), proportionate length of bill, and colour. This latter is darkest in those from India and Ceylon, the Sudan, and west Africa, and palest in the form found in Dhakla and Kharga oases, whose ground colour is silvery. The more southerly races—the dark Senegambian one excepted—have grey instead of white rumps. Occasional chequered



birds occur (see Goodwin, 1954). In the Azores and in China most of the Rock Pigeons are chequered, but are suspected of having originated from Dovecote or Domestic Pigeons. For notes on feeding and nesting behaviour of this species readers are also referred to my previous paper.

The Rock Pigeon appears to be primarily a bird of open, relatively treeless country, with cliffs or rocky escarpments in whose caves it can roost or nest. In many parts it is a bird of steppe-desert, and this may perhaps be its original biotope whence it has spread into other regions following deforestation and opening up of the country by man. On my first visits to the bird's haunts in north-west Scotland and the Shetlands, I was immediately struck by the general similarity in appearance of the landscape—in spite of different temperature, humidity, and plant species—with that of the Libyan coastal semi-desert where I first saw the bird in a wild state. One wonders if long ago the Rock Pigeon followed man across the face of the earth, much as the Collared Dove has done in recent years?

So far as is known, Rock Pigeons are sedentary. There is, however, reason to suspect that some movements—perhaps by young birds and analagous to the dreaded "Fly-away" of the pigeon-fancier—take place. Fair Isle has been recolonized after the species apparently became extinct there (Clarke, 1912) and recent observations (Guichard, 1955) suggest local migration in the Saharan regions. Naumann's (1833) detailed and circumstantial account of mass-migration in Germany can hardly be dismissed as pure imagination and if, as has been suggested, the birds concerned were Feral or Domestic Pigeons, then the occurrence was even more surprising.

The voice and displays of the Rock Pigeon do not differ from those of its domestic descendants, except in so far as some of these latter may be incapable of normal flight or movement. Those few that I have heard cooing (in Egypt and Libya only) had a similar musical rather high-pitched tone to that of most small "dove-headed" breeds of domestic pigeons, less deep and gruff in tone than those of larger breeds.

The Rock Pigeon is a bird well worthy of the attentions of the aviculturist. It is hardy, beautiful, and according to both Macgillivray (1837) and Heinroth (1927), hand-reared specimens can be kept in the same manner as domestic pigeons. As one would expect they are, according to Macgillivray, more sensitive than their coarsened domestic descendants, and if kept short of food (and probably also if subjected to any distress such as losing a mate, or being severely frightened) will desert their home and go wild. At one time blue Domestic or Dovecote Pigeons similar to the wild form were plentiful but now, at least in England, such birds seem to be nearly, if not quite, extinct. A few remain in some towns, where the authorities often



“protect” them from anyone who wishes to procure two or three alive for breeding or scientific study, but permit or encourage their slaughter for profit by professional pigeon-killers. A similar outlook unfortunately prevails regarding the wild Rock Pigeon, which is black-listed in Scotland under the new Bird Protection Act, so that the sportsmen may kill it as much as he likes. Yet when I wished to procure a single pair of squabs for my behaviour observations, some bird-protectionists were “horrificed” at my depravity.

All the evidence suggests that in Britain at least, and probably elsewhere, the Rock Pigeon is decreasing. Whether this is due to alteration of climate and biotope (certainly the depopulation of St. Kilda appears to have been the cause for the once numerous Rock Pigeons of that Island becoming extinct), competition with the Stockdove or other birds, interbreeding with Feral Pigeons, or destruction by man is uncertain. Probably more than one factor is at work, and an elucidation of the problem would make an interesting study. The Rock Pigeon's breeding habits certainly make it particularly vulnerable to modern man, since although the nests are often inaccessible, the parents *must* go in and out of the cave, and then sportsmen sitting at the entrance have them at their mercy—or lack of it. Probably the Scottish Rock Pigeons, near the northern limit of the species' range, are more vulnerable to the “extra” predation imposed by man than are their kind elsewhere. Our latest British bird protection Act has, deplorably in my opinion, a special clause to legalize the use of motor boats for Rock Pigeon shooting so that those nesting in otherwise inaccessible sea-caves shall not escape the sportsman. Since this method can, or so it was said during debates on the subject, only be undertaken successfully in summer and late spring, it is evident that many of the birds shot will have young which will be left to starve.

The keeping and breeding of Rock Pigeons of pure strain, not only of the European form, but also other races, would surely be just as interesting as the perpetuation of the many monstrous Domestic Pigeons that in their countless thousands are now eating corn that might be put to better purpose? The danger of degeneration would not be great provided photographs, measurements, and notes on behaviour of the first birds were made in order that any young that did not come up to their parents in form, colour, or behaviour could be eliminated from this breeding stock.

From the point of view of beauty, well, compare the photographs of Rock Pigeons in Heinroth (1926-7) with those of any domestic breed. I will readily concede that some breeds of Domestic Pigeons—such as the Ice, the Gimpel, the Archangel—are creatures of great beauty, but none of them, in my opinion, equal the wild form in this respect.



The Turtledove (*Streptopelia turtur*) is one of the loveliest of its genus. Slightly smaller than the Barbary or Blonde Ringdove (*S. risoria*), and slightly larger (in bulk not in length) than the Mourning Dove (*Zenaidura macroura*) its small size and white-patterned tail at once distinguish it from other British pigeons. Its head is blue-grey, shading to sepia brown on the back, and pale mauve-pink on the breast. The wing-coverts are orange-buff, mottled with black, with some blue-grey on the outer coverts. On each side of the neck there is a patch of black, silver tipped feathers, that are erected in display. The primaries and central tail feathers are dusky. The outer tail feathers are boldly patterned in dark grey and white, as is the underside of the tail. The iris is golden, and the eye is set in an area of bare wine-purple skin. The young are duller, and of a general sepia and greyish with tawny-buff edges to the wing coverts. Many, but not all, hen Turtledoves are somewhat duller and paler in colour than cocks.

The Turtledove is a summer visitor to temperate Europe, breeding commonly in many parts of England, especially in the south-east. It breeds also in northern Africa, the Saharan oases, and east to Persia and western Turkestan. The Persian form is paler and the Saharan forms are sandier and with less grey than the European bird described above. The various forms of the Eastern Turtledove (*S. orientalis*) and the dark turtledoves found in parts of Africa south of the Sahara and in Arabia (*S. lugens* and *S. hypopyrrhus*) are considered by some authorities (*Meinertzhagen*, 1954) as all geographical races of the one species (*S. turtur*).

In Britain the Turtledove likes fairly open woodland, arable country well supplied with thorn scrub, tall hedges, or copses and especially districts at the stage when agriculture is fighting a slowly losing battle with gravel extraction, building, and other forms of human "progress" and woodlands are destroyed and have reburged into scrub. The Turtledove needs ground that is bare or covered only with sparse scattered, or very short vegetation, where it can walk about unhindered in its search for food. This consists principally of seeds, but some greenfood and, probably, some quiescent forms of animal life are also taken. Hence most of its feeding is done in fallow or arable fields, on roadsides, dried-out gravel pits, and similar places. In open woodlands it will feed on the fallen seeds of conifers and perhaps also of the birch, as does the domestic Barbary Dove when at liberty. It often comes into stockyards and poultry runs to search for scattered grain. It breeds in small copses, orchards, patches of scrub, tall hedges, and open woodland. Deep woods are usually shunned, but dense thickets of thorn, hazel, crab-apple, etc., may have a large breeding population. Each nest is then, however, adjacent to an open space or larger tree that gives the parents ready ingress and exit to the thicket. The nest is built in a bush or tree, usually from four to twenty feet above



ground. The type of site chosen is very similar—on a smaller scale—to that described for the Woodpigeon, a horizontal branch of a hawthorn or crab-apple bush being a common site. Two white eggs are laid and hatch in about thirteen days. The young grow even more quickly than most doves, and can fly when fifteen days old.



Collared Dove, Turtle Dove, Laughing Dove. (The Laughing Dove is not quite to scale, it should be a little larger.)

The Turtledove has a distinctive purring coo, a sort of "Coorr-coorr" or "Turr-turr", a rather different version is used when calling on the nest site "Coorr-crr-coorr" and when displaying it utters a hurried emphatic "Crurr(wa), crurr(wa), crurr(wa)" in time with its quick bobbing bows. It has a short, "popping," explosive cry of anger or excitement that corresponds to the laughing cry of the Barbary Dove (see Goodwin, 1952), but is less freely used. In the display flight the bird flies up, claps its wings, and then glides, rather steeply as a rule, down with tail and wings widely spread.

Hand-reared Turtledoves make delightful birds for a large aviary. If carefully managed they stay very tame, and even if allowed to lose their first tameness they do not become distressingly timid. They breed freely, indeed almost too freely as a fine spell in January or February may set them nesting, with resultant egg-binding should the weather turn cold when the hen is about to lay. They should,



therefore, on no account be allowed to nest before April. Hand-reared birds show no distress at not being allowed to migrate, and are extremely hardy, but should not be allowed to roost outside in cold weather. Wild-caught adult birds soon become relatively tame and steady, and would doubtless breed quite freely under suitable conditions. I cannot, however, give any personal observations on this point, as the only wild-caught Turtledoves I have observed were in Malta and Egypt, and kept under conditions where it was most unlikely that they would ever come into breeding condition. The fact that they survived at all speaks volumes for their hardiness. Still, there is something unpleasant about confining a bird that has become accustomed to making a long migration, as every adult Turtledove has. The question is rather academic for British aviculturists, as the Turtledove is now protected here at all seasons, and it is illegal to take either eggs, young, or adults. Whilst no one can cavil at the protection of this harmless and beautiful bird from the kind of exploitation to which it is elsewhere exposed, yet in view of the vast numbers of English-bred Turtledoves that are shot in France, Spain, and Portugal on migration, it is rather vexing that an Englishman interested in keeping and studying pigeons is not allowed even to take a single pair of squabs for observation and study at close quarters.

Unlike the Barbary Dove, the Turtledove has a very strongly developed "homing instinct" and captive birds that escape, even under the most unfavourable circumstances, almost invariably return home within a day or so, except during the migration period. As aviary birds they have one fault. They are very easily alarmed at night, and if roosting in an open aviary they will then flutter madly against the wire, injuring themselves and alarming any other birds. I suppose the fluttering of a bird against wire suggests the wild struggling of a bird seized by a predator, since it seems to act as a "releaser" to induce similar panic in other birds. Even the Barbary Dove, which hardly any amount of other disturbance in the least perturbs, will often dash madly from its roost and batter against the wire if it hears this sound. This has nothing to do with wildness or tameness, the hand-reared Turtledove that flies on to your shoulder and lets itself be handled freely is just as liable to panic at night as a wild and timid one. There is only one possible way of dealing with this, unless, like the proprietors of some Zoological Gardens, you do not mind seeing your Turtledoves with scalped heads half the time. Each evening either lure or drive the birds into a shelter to roost or else pick them up one by one and put them for the night into a pigeon basket or similar receptacle. Beneath a shelter roof they will seldom get alarmed, but if they do then the pigeon basket must be used for them. Turtledoves very soon get used to this procedure—tame ones may be



lifted on the finger to avoid handling them, which soils their plumage—and will breed and behave quite normally when it is carried out. They must of course be liberated at dawn or near it, not left in the basket for hours after daylight.

The Collared Dove or Indian Ringdove (*Streptopelia decaocto*) has of recent years caused great excitement in the ornithological world by its rapid extension of range (see Fisher, 1953). It is now a common bird in many parts of Germany and Holland, and has occurred once in Britain, though this bird may have been an escape. In size it is a little larger than the domestic Barbary Dove, and has a proportionately longer tail than most specimens of the latter. Its colour is a general pale greyish fawn (not creamy-buff as in the domestic bird), with blackish primaries and a mauve-pink tinge on head and breast. It has the same red eyes and black, silver-edged half collar as the Barbary Dove. The young are duller, with light edgings to the covert feathers, and have only an obscure dark marking on the sides of the neck. It has a wide distribution throughout much of Asia, the Burmese form (see Newman, 1906) being darker and with conspicuous yellow skin around the eye. The Rose-grey Dove (*S. roseogrisea*) which I have discussed before (Goodwin, 1952) in reference to its almost certainly being the ancestor of the Barbary Dove is considered by many to be conspecific with *S. decaocto*. With this opinion I am inclined to agree, since (see Hofstetter, 1954), the behaviour of the Collared Dove and the Barbary Dove are virtually identical, in spite of the difference in sound of their calls. Anyone visiting the London Zoo where both Collared Doves and Barbary Doves are confined in the same aviary cannot, I think, help coming to the conclusion that they are watching birds of the same species. Taibel (1953), considers *S. decaocto* and *S. roseogrisea* to be distinct species, chiefly because of their difference in voice. The difference in tail markings (see Hartert, 1916) between *S. roseogrisea* and *S. decaocto* is not constant. I have seen a skin of *S. roseogrisea* in which the tail marking is as in the larger bird.

In Europe the Collared Dove is very definitely a symbiote, or parasite, of man. It frequents gardens, park and scrubland, and towns, and subsists very largely on grain fed to poultry and other livestock. Its tameness tends to disarm human annoyance, and so its "pilferings" do not meet with the same disfavour as those of other pigeons. This immunity from harm by man and his supplying it with food probably account for the bird's phenomenal success and rapid increase. Possibly also the recent large-scale killing of sparrows in Germany has helped it in that country by relieving it of competition for man's bounty. In addition to grain, it also takes elderberries, seeds of various weeds, and some greenstuffs. Probably also some forms of invertebrate life, though these have not been recorded. It nests usually in trees, but



sometimes on ledges in buildings, and may have as many as five broods in succession (Hofstetter, 1954) between March and October. The territorial "song" of the Collared Dove is a loud "Koo-kooo-kook" with the middle syllable stressed. Similar cooing, but with the accent no longer on the middle syllable, is given when displaying and when calling to nest (see Hofstetter, 1954). A peculiar nasal cry, difficult to put into human words (and variously done so by most who have tried), is uttered under the same circumstances as the laughing cry of the domestic form. The display flight is very similar to that of the Turtledove.

The Collared Dove is easy to keep in captivity, and goes to nest freely, even when freshly caught (Grunefeld, 1952). Where it is common there would be little point in keeping it, as it is so tame that it can be freely observed in a wild state. From its habits it is almost certain that captive birds could be easily kept at semi-liberty, but in view of the interest attaching to its natural spreading in Europe, it is of utmost importance that anyone keeping this species should ring *all* their birds.

The Laughing Dove or Palm Dove (*Streptopelia senegalensis*) should not strictly speaking be included in this article, as it does not occur naturally in Europe. It has, however, been introduced into Malta (Goodwin, 1948b) and perhaps elsewhere, and this and the fact that it is commonly imported in a captive state is my excuse for mentioning it. It is somewhat smaller than a Turtledove, with proportionately shorter wings and longer tail. Its general plumage is warm reddish-brown, with some slate-blue on wings, rump, and tail. The head and breast are reddish-vinous, except for a patch of bifurcated feathers on front and sides of neck that are blackish with golden-coppery tips. These form a bright spotted area when the bird inflates its neck in display. Its tail pattern is similar to (but not identical with) that of the Turtledove. There is some racial difference in size and colour. The Egyptian form is larger and very deep reddish (in the male), the Indian ("Little Brown Dove") is greyish-brown rather than reddish-brown on back and wing-coverts. In Egypt most females are noticeably duller and paler in the reddish-brown parts than are males, but examination of skins suggests that this dimorphism of the sexes is less in other parts of its range. The young are duller, with rufous edgings to the wing-coverts, and lack the bifurcated neck feathers.

This bird is found widely throughout Africa, India, and the Middle East, possibly owing its presence in some places—such as Beirut and Istanbul, to human introduction. It is generally very much a town or village bird, showing little fear of people, and nesting on ledges and rafters in buildings as well as in trees and shrubs. It feeds on the ground, principally on seeds, although it probably takes some forms of inactive animal life also. It has a pleasant laughter-like cooing,

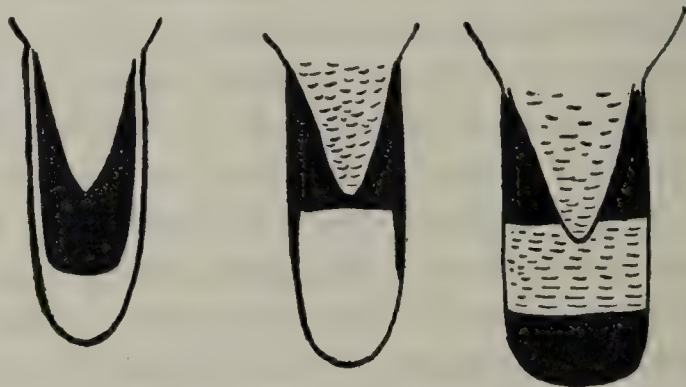


soft and gentle in tone. Some birds caught wild in Egypt (Goodwin, 1947) bred at once in captivity, and it is well known to breed freely in aviaries in Britain. It is said to stay well when given its liberty, and no doubt does so until a Tawny Owl finds its roosting place. Anybody thinking of trying this bird at liberty would, I imagine, be well advised to catch it up as soon as the leaves fall, and confine it for the winter.

Whilst Laughing Doves are just as easy to hand-rear as any others, and such hand-reared birds are in every way preferable, still the objections to using wild-caught specimens are much less with this than with most other species. Naturally inclined to be "tame" they soon become more so, and if properly looked after will at once settle down in captivity.

### *Tail Patterns and Display Flights*

The markings on the tails of pigeons are worth considering in some detail, but here I will confine myself to the species dealt with in this article. The Rock Pigeon's tail is bluish-grey with a broad but ill-defined black terminal band. The narrow outer webbing of the two outermost tail feathers is white for the basal two-thirds (approximately) of their length. The underside of the tail is darker, with the markings indistinct or virtually absent. The Stockdove's tail is very similar, but shows an ill-defined narrow bar of slightly paler grey across the middle. This is almost, if not quite, equally evident on the underside of the tail, and in life is actually more noticeable from below if—as is commonly the case—the flying bird is seen against the light.



Under tail patterns of Turtle Dove, Collared Dove, Woodpigeon. (These are not to scale.)

In the Woodpigeon's tail we find the light grey central band well developed on the upper side of the tail (except on the two central feathers) and conspicuous when the bird spreads its tail in flight. The underside of the tail however, is even more clearly marked in very pale and very dark grey, and is most conspicuous when the bird is viewed from below.

The three *Streptopelia* species have the uppersides of most of their tail feathers (the central ones, which alone are visible from above



when the bird is at rest or feeding with folded tail, are dull and cryptic), patterned in dark grey and white, or whitish-grey. All have the undersides of their tails boldly patterned in black and white (see sketch).

These differences are almost certainly connected with behaviour patterns, and are not merely the fortuitous by-products of physiological processes. The four species with a conspicuous pattern on the underside of the tail all have a display flight in which the bird (normally) first flies *upwards*, then glides or floats forwards and downwards. The initial towering is probably referable to the necessity to rise clear of the surrounding tree tops. At the same time in this sort of flight display other birds perched near by will see the displaying bird from beneath, whence the markings on the underside of the tail will be most conspicuous.

The Rock Pigeon, in its display flight, flies straight out from the cliff or building, inclining its flight horizontally or even slightly downwards. (Domestic Pigeons starting from the ground or a pigeon-house roof must often fly upwards to clear immediately surrounding obstacles, but otherwise they do not do so.) Other Rock Pigeons near by are therefore likely to see the displaying bird from above or on a level rather than from below. The above instances suggest that conspicuous markings on the *underside* of the tail have probably evolved in correlation with a display flight in which the bird is usually seen from below by other members of the species. The white markings on the upper side of the tail feathers of doves of the genus *Streptopelia* probably function as a social signal eliciting a following reaction (? especially in the young) when a bird flies up or alights. They are not, however, exhibited in the bowing display, as are the very similarly marked tail feathers of the doves of the genus *Geopelia* and the Wonga-wonga Pigeon (*Leucosarcia melanoleuca*).

The Stockdove occupies a rather intermediate position in this respect. The display flight is very similar to the Rock Pigeon's, but the bird's tail markings—such as they are—are as pronounced on the underside of the tail. It is possible that the Stockdove's display flight, taking place as it commonly does among or near trees, is most often seen from below by others perched among the branches. One might surmise that the Stockdove's tail markings are at a half-way stage, and in the course of evolution may—in the event of Man not destroying the world and all its bird-life beforehand—either develop further or be completely lost. On the other hand it may well be that the rather indistinct tail barring of this species is of purely physiological significance. A possibility to which the occurrence of very similar tails in some other *Columba* species may add weight. The barring of the upperside of the tail of both this species and the Wood-pigeon may be referable to the bowing display, when the tail is opened



as it is raised. Though I doubt if it is at most more than of minor importance in this display.

It would be most interesting in this connection to have an accurate description of the display flight of as many species of pigeons as possible. Perhaps some of our American readers could tell us if the Band-tailed Pigeon (*Columba fasciata*) and the Mourning Dove (*Zenaidura macroura*) with their striking tail patterns, differ in the form of their display flights from the Red-billed and White-crowned Pigeons (*Columba flavirostris* and *C. leucocephala*) with their unmarked tails?

*Hand-rearing, imprinting, settling, etc.*

No birds are less trouble to hand-rear than young pigeons. In most species a morning and evening feed are quite sufficient owing to their large crop capacity. If it is desired to have the birds really tame it is best to take them as soon as the feathers of back and wings are just breaking from their sheaths. If they are left till well-fledged—at any rate in the case of the Woodpigeon and Stockdove—they nearly always become wild and afraid of their keeper as soon as they can feed themselves. This may not apply to the Laughing Dove, Collared Dove, and Turtledove, of which I have never hand-reared late-taken fledglings. It would be interesting to know if the young of the tame London Woodpigeons would behave differently in this respect from their country-bred relatives. The latter, if taken when well fledged, or even if caught after leaving the nest (but before beginning to feed themselves) soon co-operate in artificial feeding, but in my experience become timid on reaching independence if taken after about the tenth or twelfth day. Colquhoun (1951) working with larger numbers found the same.

Young pigeons taken prior to fledging may miss parental brooding at first. One should not therefore try to "copy Nature" by dumping them on a platform of twigs, but construct a snug artificial nest for them. If they show signs of discomfort through cold covering them with a loose cloth or putting beside them a slightly older young Domestic Pigeon may be resorted to. Once they are well feathered a pigeon-basket with a thick layer of peat moss or similar material on the floor is ideal. They can see through the slats, and thus get used to strange sights and people if the basket is often moved about. They should also be handled, and carried about on the hand, as much as possible. The more this is done at an early age, the less nervous of strangers and novel scenes will they be in after life.

Some people find it difficult to feed young pigeons, but nothing is more easy. Wait till the young bird's crop is empty (but do not let a young pigeon remain any length of time in this condition) before starting, as if it is hungry it will be more co-operative. Grasp the



base of its bill gently between thumb and forefinger of one hand. With the other gently prise open the mandibles and put some food into the mouth. The bird will swallow it eagerly, and when this has been repeated a few times it will gape open its bill as soon as it feels the



Two methods of feeding young Pigeons. (a) the efficient, (b) the spectacular.

pressure of thumb and finger on either side. It seems to aid peristalsis if during feeding one "pumps" the young bird's head, by means of the hand holding its bill-base, up and down in a similar manner to the head of the feeding parent. Either because the hand-feeding does not supply quite the right stimuli or because it is less comfortable than the natural way pigeons being so fed will often cease to gape before their crops are much more than half full. If this happens with small young that are going to be left some time before the next feed, one should continue to feed as long as the young swallow readily when



food is put in their mouths. One will of course be easily able to avoid over-filling the crop, presuming one has some experience of naturally reared pigeons. After feeding give the bird a drink, and some five minutes later let it drink again if it will. To do this, hold its bill as described, and insert it into a cup of warm water (or other liquid). As soon as it feels liquid over its nostrils the squab will drink eagerly if thirsty, and withdraw its head if it is not.

An alternative method of feeding is to fill one's mouth with food and insert the young pigeon's bill between one's lips. This method is very spectacular in the later stages when the "dear pretty birds trying to kiss their kind master" can be relied on to send a certain type of bird-lover fairly into ecstasy. It is, however, in my opinion less efficient than the way suggested. One is liable to finish with one's own oesophagus full of soaked peas and the squab's crop full of human saliva. Still, I must admit I have met one or two people who could feed young pigeons quickly and efficiently by way of mouth.

All the species in this article can be reared on soaked wheat and maple peas (the latter broken up at first for Turtledoves or Laughing Doves) together with a little bread and milk (wholemeal bread cut into suitable sized cubes and dipped in milk just prior to feeding), cooked egg, peanuts (broken up for the smaller doves), and greenfood, not much of the latter except for Woodpigeons. Being now very vitamin and mineral conscious, I should give a drop or two of halibut oil every week or so, and a pinch of the minerals sold for Domestic Pigeons every few days. Also a little grit. But I have in the past reared them without these extras. Colquhoun (1951) successfully reared young Woodpigeons on nothing but maple peas and a little milk, and I have known a Stockdove to be reared and kept for eighteen months (but *then* it died) on nothing but wheat. This latter bird was, however, in an outdoor aviary where it could no doubt get some minerals and so on, from the soil. Once the young are about three weeks old it will be unnecessary to soak the grain, and one can then fill one's half-clenched fist with corn and let the squeaker thrust its bill between thumb and finger, and literally pour the grain into its mouth.

When the young start to feed themselves (for methods of retarding or hastening this, see my previous paper), it is advisable to get them accustomed to a wide range of foods. This will obviate difficulties later should some grains become unobtainable. It is a very good idea to start them feeding on soft food, large seeds such as peas and peanuts, and so on. If they start thus it will be quite easy to get them to take smaller seeds later, but the converse is not always true. If they are taught to eat a wide range of foods it will also increase their chances of survival should they escape and fly away, or have to be cast adrift owing to war breaking out.



Domestic Pigeons will hatch and rear the young of wild species of about the same size, for the smaller Turtle and Laughing Doves the domestic Barbary Dove is better, though many Domestic Pigeons will rear such small young. It is necessary that the eggs or young exchanged are about the same age, as if the young hatch too soon they will die of malnutrition if the fosterers have no pigeon's milk for them. Young that have begun to feather may not be readily accepted, though some cock Domestic Pigeons will feed any young pigeon, be it black, white, or piebald, so long as they are in the parental phase of breeding cycle.

There are two disadvantages in rearing wild pigeons by this seemingly easy manner. Firstly the young seldom show any tameness, but in spite of their foster parents' example, become wilder and wilder, and finally fly away to return no more. At least this has been the case with three nest-pairs of Woodpigeons and one of Stockdoves that I have known to be reared by this method. Perhaps had the young been handled, fed, and carried about for an hour or so each day by their owner, things would have been otherwise. At least a young Speckled Pigeon (*Columba g. guinea*  $\times$  *C. g. phaenota*) which is now (3rd February, 1955) 7 weeks old, seems to have been successfully tamed by this method, despite the wildness of its parents.

The second danger is that the young birds may grow up completely fixated on the foster species, so that they will not in adult life react sexually to their own kind. Such birds are of course useless for breeding, unless one wishes to produce hybrids with the Domestic Pigeon. This "imprinting" may occur even if the young are hand-reared in association with Domestic Pigeons (or any other species), and in company of another of their own kind, as happened with a cock Woodpigeon I once had (Goodwin, 1948a). Such birds are of course likely to be good "stayers" provided Domestic Pigeons are kept. But to provide them with a mate would probably necessitate imprinting a Domestic Pigeon of the opposite sex on their species. Most often, however, young brought up with both their own and another species as companions (having been fed first by their *own* parents and then by man) will later react socially to both species, and often to humans as well. They will generally pair most readily with their own kind, owing to mutual "understanding" of the specific notes and displays. Thus they are quite valid for breeding purposes or behaviour studies, and a positive reaction to Domestic Pigeons or Barbary Doves (supposing one of these to be the other species they are reacting to) is an advantage if they escape, or are to be kept at liberty. In fact the only wild pigeons I have so far kept at liberty were showing positive social responses to my Domestic Pigeons. It would, I think, be much harder to "settle" such as were not, especially if their own species were common locally.

If any attempt is going to be made to fly them at liberty in later



life, it is a great advantage to make the young pigeons familiar with the neighbourhood of their home at an early age by carrying them about on the hand before they can fly. Young birds are more likely to stray than old ones, but they seldom go for good on their first outing, so that it is a very good idea to let them out a few times at an early age. This will obviate the likelihood of their flying so far off when first liberated that they are unable to find their way back. After the first few flights it would probably be expedient to keep the bird confined until it has matured and paired. Much will depend on local circumstances and the individual bird, and the owner should be best able to judge when the time is ripe to liberate it. A few very general suggestions may be given, however, as follows.

(1) The bird should have been able to see all around outside its enclosure for at least a week prior to liberation.

(2) If it is reacting socially to Domestic Pigeons or Barbary Doves the owner should have some of these at liberty and accustomed to feed near the aviary to which (it is hoped) the wild pigeon will return.

(3) Failing the above, or additionally thereto some of the bird's own species should be in a near-by enclosure and readily visible.

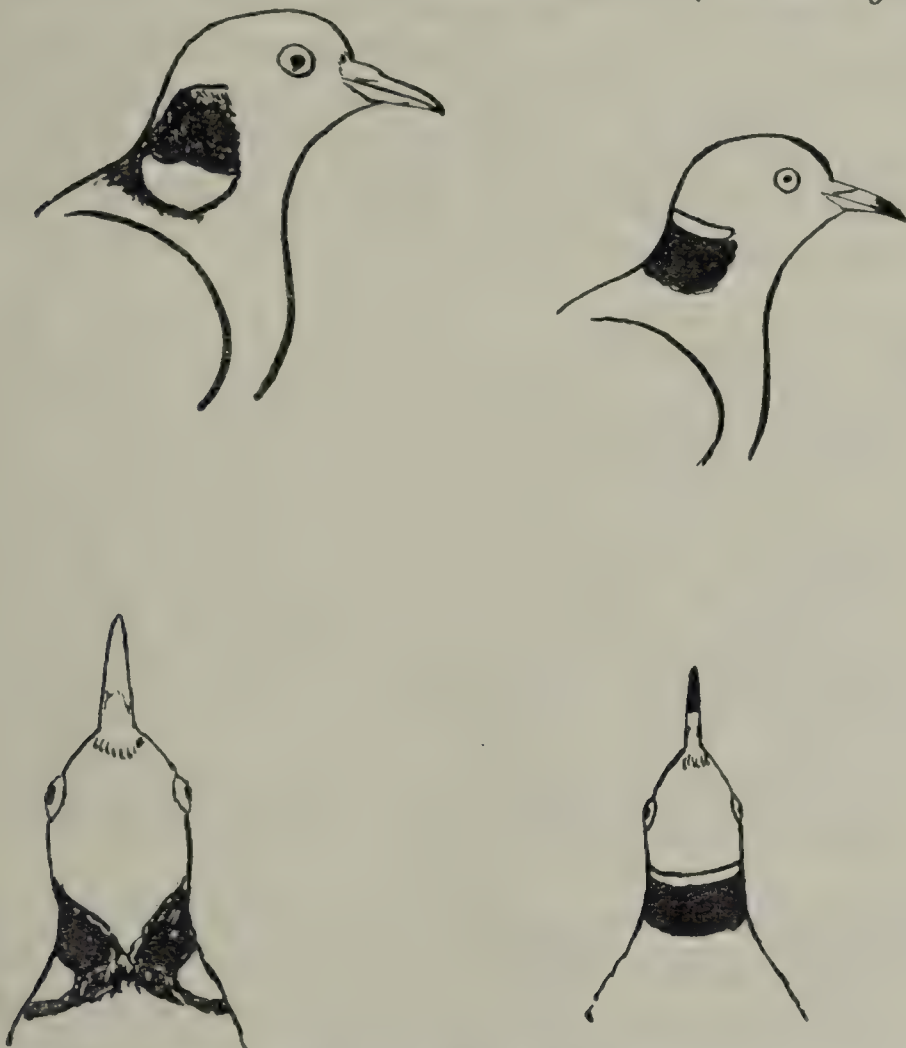
(4) The bird should have been trained to respond to a particular call or whistle for food, and if possible to go *voluntarily* into a shelter to roost. This last because birds accustomed to do this—even when of species like the Woodpigeon and Domestic Fowl that would otherwise go into a tree—will usually try to come into a building or under a roof to sleep, which greatly adds both to their safety and their owner's control over them.

Even if the above council of perfection can be complied with, one will still have losses. Birds at liberty meet violent ends, and sooner or later the sportsman's gun, some predatory bird or mammal, or some vexatious accident will write "finis" to the creature that has given you such interest and enjoyment. But provided one takes all possible precautions *and the bird is fit*, one should not feel any moral qualms against liberating it to a fuller if more hazardous existence. The above remark does not of course apply to such species of exotic pigeons—or any other birds—as would be quite unable to survive if lost for only a few days in our climate and environment. It goes without saying that anyone who values their birds at all will ring them with name and address rings whether they intend to liberate them or not. Such rings cost less than a shilling each, and often prove of utmost help, as with a Barbary Dove of mine which flew to Ireland and was subsequently returned safe and sound. There may be reasons why one hesitates to label as one's own a tame Raven, Eagle, or other creature liable to pull off one's neighbour's ear or eat his baby, but there can be no possible reason, other than slackness and incompetence, for not so ringing pigeons.



*Comparison of European and North American Species*

North America has more species of wild pigeons than Europe. Of these, however, many are found only in some of the southernmost states of the U.S.A., and are primarily Mexican and Central American species. I propose here to mention only the species that are (were, in one case) found more widely in the United States and in those areas that are to some extent comparable to Europe in climate and vegetation. These are the Band-tailed Pigeon (*Columba fasciata*), the



Heads and display plumage of Wood Pigeon and Band-tailed Pigeon.

Passenger Pigeon (*Ectopistes migratorius*), and the Mourning Dove (*Zenaidura macroura*).

The Band-tailed Pigeon of western North America shows some resemblance to our Woodpigeon. When living birds, or even museum skins, are compared, however, it will be seen that the two are much less alike than some coloured plates make them appear. The Band-tail is smaller, its grey and mauve-pink colours are darker and different in tone, its yellow legs and black and yellow bill are strikingly unlike the greyish-mauve legs and yellow-orange bill of the Woodpigeon. The white and green display markings on the neck are differently arranged (see sketch) and the glossy green feathers differ in both structure and colour. The Band-tail is certainly more closely related to most, perhaps, all of the South and Central American species of



*Columba* (a genus composed of a rather heterogeneous collection of large or medium-sized pigeons with more or less square-ended tails) than to any old-world species.

In its feeding habits the Band-tail appears to be very close to the Woodpigeon, and therefore shows, as would be expected, a similar ability to cling and clamber in the branches. It seems to have been less successful at adapting itself to co-existence with modern man, no doubt because human civilization has burgeoned more rapidly in the new than in the old world. It is, however, already learning to take advantage of man's activities, and often feeds largely on cultivated grains (Glover, 1953). A detailed study of the innate behaviour patterns—especially those not directly connected with food-getting—of the American species of *Columba* would be of utmost importance in reference to their relationships with each other and with old-world species.

The extinct Passenger Pigeon appears to have filled the "Woodpigeon niche", or its equivalent, in eastern north America, although it had developed its adaptation to its environment on rather different lines to any other species. Chief of these was its extreme gregariousness which enabled it, when nesting, to succeed, in spite of furred and feathered predators, by sheer weight of numbers (see Scherger, 1955), but which proved its undoing once civilized man got to work on it. It ill-becomes us, however, to adopt a "holier than thou" attitude towards Americans in this matter. That our Woodpigeon has not shared the same fate as *Ectopistes* is due to its own greater adaptability and more solitary nesting habits, not to any lack of greed or cruelty in ourselves.

The Mourning Dove, now the most abundant and widespread pigeon in North America, seems to fill a rather similar niche to our Turtledove. The two are probably, however, not very closely related. Like the Turtle- and Stockdove in Europe, the Mourning Dove has almost certainly benefited from agricultural man's activities. Possibly also the elimination of the Passenger Pigeon enabled it to widen its niche a little.

One other point of interest may be mentioned. Whereas all the European species of pigeons lay two eggs, the larger North American species lay only one. This suggests either their fairly recent derivation from tropical forms—for many tropical pigeons lay only one egg—or a poorer food supply. The fact that most frugiverous pigeons lay only one egg suggests that a fruit diet might not enable the parents to produce crop-milk sufficient for a brood of two. On the other hand, the Passenger Pigeon with its relatively rich diet of beechmast, worms, and so on, laid only one egg. Here, however, it might have been biologically advantageous to have one young one fledge as quickly as possible, rather than two taking even a little longer, in view of the



heavy demand the breeding colony made on neighbouring food resources.

It is of interest that no cliff or cave-dwelling pigeon inhabited America prior to the introduction of domestic forms of the Rock Pigeon. These latter have now filled this niche in some places, although as a rule they have taken up the role of "town pigeon" rather than that of truly wild birds.

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## BREEDING OF THE RED-TAILED BLACK COCKATOO

(*Calyptorhynchus banksi*)

By KENTON C. LINT (Curator of Birds, Zoological Gardens of San Diego, California, U.S.A.)

The first successful breeding in captivity of this species in the United States was achieved last year in the Zoological Gardens in San Diego, when a baby was hatched on the 22nd November, 1954.

The single white egg was laid 25th October, 1954. We recorded an incubation period of twenty-nine days.

The Red-tailed Black Cockatoo is also known as the Banksian Cockatoo because of its fondness for banksia scrublands. At one time these magnificent Cockatoos were found throughout Australia with the exception of Cape York, and were plentiful even quite close to the great city of Sydney.

Unfortunately they are fast disappearing due to the lumbering off of the forests of eucalyptus, *Casuarina*, and banksia, the seeds of which form their staple food, and to the fact that thousands have been shot to be eaten as food.

The Zoological Gardens of San Diego first acquired this species on 21st June, 1950, through the kindness and generosity of Sir Edward Hallstrom, Sydney, Australia, who was willing to send us birds raised in his private aviaries, and who believed we would be able to propagate this rare species in captivity in the United States.

Red-tailed Black Cockatoos assume their adult plumage in the fourth year and are very long lived.

In Arthur A. Prestwich's *Records of Parrots Bred in Captivity*, Part II, 1951, p. 33, the late Marquess of Tavistock is given the credit for the first breeding of this species. "Mr. Gorman, who had charge of the famous collection of Parrots and Parrot-like birds belonging to the Marquess of Tavistock was forced to remove the baby from its nest and hand-rear it" (A.M., 1940, 136). Alan Lendon (A.M., 1943, 164, describing a visit to Hallstrom, Sydney, Australia, says: "Successfully bred by E. Hallstrom in 1943." And Hallstrom, *in litt.*, 8th December, 1948, writes: "I am breeding regularly Black Cockatoos (Banksian)" (recorded in A.M., 1949, 31). Alan Lendon (*Parrot Records, Adelaide Zoo Gardens*) records that two young ones were successfully reared in the Adelaide Zoological Gardens in 1945.

The Red-tailed Black Cockatoo is one of the most interesting of all Australian species of birds. The general colour above and below is black with a greenish gloss. Many of the feathers have a wavy appearance. The tail, with the exception of the two central feathers, is crossed by a broad crimson belt or band. The bill is slate-grey in colour. The





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BABY RED-TAILED BLACK COCKATOO.  
Age 28 days. 20th December, 1954.

To face p. 86]





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[San Diego Zoo

ADULT MALE RED-TAILED BLACK COCKATOO.

To face p. 87]



legs and feet are mealy-black. The eyes are dark brownish-black in the adult male.

The adult female differs greatly from the male in coloration. The general colour above and below is black tinged with brown. The back, scapulars, primary feathers, secondary feathers, and central tail feathers are black. The second, third, fourth, and fifth primaries incised on the outer webs and the first to the fourth on the inner webs; upper wing-coverts and bastard wing black fringed with pale brown and with whitish markings to the feather; outer tail-feathers barred and mottled with yellow and red on the middle portion of the feathers, the bars becoming narrower towards the tips, the under surface of the tail is much duller in coloration than on the upper parts. The crown of the head, occipital crest, and sides of face are black with pale yellow subapical markings to the feather. The breast and abdomen are brownish-black, the feathers on the former barred with dull yellow, and those on the latter with a mixture of yellow and red. The under tail-coverts are black and barred similarly to the abdomen. The bill is whitish-grey with a greyish-brown tip. The legs and feet are mealy-black. The iris is brown, the orbits are black.

In Central Australia this Cockatoo is often associated with aboriginal rain ceremonies. The beautiful tail feathers banded with vermilion are used for decorating ceremonial objects and are also worn as head ornaments in corroborees.

While these birds do a certain amount of damage to the trees among which they feed they are of inestimable value in destroying the larvae of the longicorn beetle which are so harmful to Australian timber.

In captivity we have found the most suitable food for the Red-tailed Black Cockatoo to consist of Indian corn (on the cob), sunflower seed, oat groats, wheat, peanuts, pine nuts, apple, lettuce (by the head), and dried bread. During the breeding season only cuttlefish bone is added to supplement this daily diet.

There are many aspects on which the field ornithologist and the practical aviculturists do not see eye to eye, but it must be granted that, housed and cared for under good conditions, birds can provide much of interest and enable the garnering of detailed data not possible with birds in the bush.

Unless aviculturists solve the problem of propagating this particular species in confinement it probably will not be long before the Red-tailed Black Cockatoo will be added to the long list of beautiful and desirable birds which have vanished from the face of the earth.

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## RED-CRESTED CARDINALS

*(Paroaria cucullata)*

By D. H. S. RISDON (Dudley, Worcs., England)

The beginner in foreign bird keeping who wants some showy, hardy birds could not do better than invest in a pair of Red-crested Cardinals. They have much to recommend them, being as hard as nails, beautifully coloured, reasonably priced, and easy to feed and manage. The only snag about them is that they are not easy to breed, requiring unlimited supplies of live insects when rearing young.

I think a Red-crested Cardinal could be described as being somewhat smaller than a Starling and slimmer in shape. It is blue-grey above, snow-white below, with a bright red head and crest.

One of the things I like about this bird is its bold swaggering demeanour. It is very active and somewhat restless in a cage, although it will do perfectly well when kept under such conditions, provided the cage is not less than, say, 3 feet long, to give it plenty of room to take exercise. However, the Red-crested Cardinal looks its best in an outdoor aviary, and when this is large enough for it to find a certain amount of insect life it will be found that its head and crest maintain a much brighter red than when it is kept indoors.

These Cardinals are difficult to sex, both cocks and hens having exactly the same colouring and markings. If you are at all observant, however, you can after a while pick out a true pair. If you watch your birds carefully when they are not on the alert, it will be found that a cock keeps his crest lowered and only puts it up when excited, while a hen seems to keep her crest more or less permanently erect. This is not an infallible guide, but in practice I have found it a very good indication as to sex. You need several birds together to be able to make the comparison. Unless, however, you are intent on trying to breed Red-crested Cardinals, it does not really matter whether you have a true pair or two of the same sex, as either way they seem to agree quite well.

Personally I have never heard a Red-crested Cardinal sing in a cage, but in a garden aviary it does so quite well, the song having some pleasant mellow notes reminiscent of that of a Song Thrush.

These birds have a reputation for being destructive to growing vegetation, but in an aviary of sufficient size their depredations will not be noticeable. In any case, I think it a mistake to try and plant *small* aviaries as the bushes quickly get soiled and nibbled by almost any birds.

A good seed mixture for Red-crested Cardinals is three parts canary to one part white millet, with just a trace of sunflower and hemp ; but do not overdo the latter if the birds are kept in cages, as it is too



fattening for them. It will be found in practice that they eat far more canary than millet. Greenfood is eaten in moderation, such as lettuce, dandelion, and chickweed, and seeding grasses are liked, and I have found that in a mixed aviary along with fruit-eating birds they will sample orange and apple as well. Although Cardinals will live for years on a diet of seed and greenfood alone, I am quite sure that live insects are good for their health, and they most certainly improve their colour. If your birds are kept outside in a fair-sized aviary they will probably find all they need for themselves, but kept indoors they should have a regular supply of maggots, mealworms, or any other insects you can find for them. Maggots can be given *ad lib*, but mealworms should be strictly rationed, as the birds like them so much that they tend to over-indulge in them with disastrous results to their livers. Two or three mealworms per bird per day are quite sufficient. Out of doors in an aviary, of course, they can eat many things which would be detrimental to them in a cage, and where kept in a mixed collection will eat all sorts of other foods offered to different species, without apparent harm.

Red-crested Cardinals can be spiteful towards birds smaller than themselves, especially when they come into breeding condition, but here again much depends on the size of aviary in which you are keeping them. In the ordinary small enclosure it is most unsafe to risk them with birds the size of Waxbills or Mannikins, but in large enclosures the risk is not so great as the other birds can get away from them.

As I have stated above, Red-crested Cardinals are not easy to breed, although there are a number of records. A friend of mine told me quite recently that he bred a lot of young Cardinals one year, but that most of the young birds died off before they started the autumn moult. In a wild state they build an open cup-shaped nest in a bush, so if you wish to try and breed Cardinals similar conditions should be afforded them in an aviary by fixing up clumps of bushy twigs in secluded corners as well as a few nest boxes open at the front except the bottom third, which should be boarded in to retain the nesting material. Such boxes should be well screened with bushy twigs to give seclusion. You will probably find that your pair of Cardinals will go to nest readily enough, and even lay and sit, but rearing the young is another matter, unless you can provide plenty of live insects. Like so many so-called seed-eaters, Cardinals become almost entirely insectivorous when they have a brood of young to rear. At such times it will be advisable to keep a pot of well-cleaned gentles in their aviary, and give a feed of mealworms several times a day, not to mention any other insects you can find in the garden.

Although I have never tried it, I should think that a pair of these birds would make excellent liberty subjects whilst they had a nest,



provided you have no trigger-happy neighbours with guns and your district is not unduly infested with cats. The technique is to allow the birds loose when young hatch, and to confine them again to the aviary when they are due to fledge, otherwise you are liable to lose the whole family. In this way you will save yourself a great deal of time and work, as the birds find their own live food and, incidentally, will probably rear far healthier young.

A pair of Red-crested Cardinals in my garden aviary last spring had nearly completed a very nice nest in a privet bush when one of them was picked up dead one morning, and that was that. The nest was made of fine twigs and lined with dry grass roots.

\* \* \*

## SOME VERY MISCELLANEOUS WINTER NOTES

By The Rev. J. R. LOWE (Coln St. Aldwyns, Glos., England)

Early last May a very rough but healthy specimen of *Siphia strophciata* (the Orange Georgetted Flycatcher) arrived at this vicarage. He had no tail, very few flight feathers, many body feathers missing, but a most lovely orange-crimson spot under his chin, and a prominent white eye stripe. His head and back were gun-metal grey, upper breast black, lower breast and belly dirty white, legs and beak greyish-brown colour. That was all that there was to see in May.

After two days in a cage to recover from the journey he was put into a small garden aviary with a good deal of cover and allowed to vegetate for the summer. The whole demeanour of this bird is robin-like; about the size of a stoutish Robin, it has the same bold dark eye, the flick of the Robin's tail, and that bird's endearing friendliness.

Through the summer the Orange Throat did well, and on enriched softbill mixture, gentles, and a lot of natural food produced a wonderful moult, so that by September quite a transformation had occurred. The tail had the two centre feathers longest, and these from above were gun-metal grey, the rest of the tail made up of feathers with a white tip, then a portion of black, and the rest of the feathers white. The tail when opened in excitement or anger shows up the black and white, and is slightly fan-shaped. The upper black breast was now liberally frosted, this being true also of the orange spot, the bird looking highly polished all over. He is a great one for baths, and loves a spray each day when he is indoors.

So far the song has been little but good, a very sweet, silvery warble, reminiscent of Tickle's Blue Flycatcher, sometimes a few guttural interjections.



Skinner's *Indian Birds* says this bird is seen in Sikkim, 9,000 to 10,000 ft. He seems quite happy now in a temperature of  $56^{\circ}$  to  $60^{\circ}$ , will always take a mealworm before a gentle, and throws a regular pellet.

Towards the end of October two Wedge-tailed Drongos arrived. These birds, though I would not like them to know I'm writing this, are not very exciting. They have moulted quite nicely—they had broken their tails when they arrived, so every bit of tail was removed—and now the long wedge-shaped tail looks very smart. They are jet black, with a little frosting on lower breast, small black feet and short legs, strong black beak, with whiskers, whole plumage takes quite a gloss. General behaviour rather shrike-like. One is a bit larger than the other and so I hope a pair, but at times they are not very kind to one another, and at times the shrieks of protest proceeding from that indoor aviary makes one wonder if Mr. Drongo is a thoroughly nice man. I shall be glad to get them into a garden aviary, where they will look more attractive and get more live food, of which they are inordinately fond. These birds are about the size of a small, rather thin cock Blackbird. Flight rather moth-like. I often think the behaviour of Drongos, Rollers, and Shrikes has much in common. These two birds will have to live with Turtle Doves and Golden Pheasants in the spring.

A Blackbird baby rescued from some very young children in May has given us very nearly his full spring song all day and every day since mid-December. He lives in the birdroom, and the temperature seldom goes below  $50^{\circ}$ , and his diet is generous. This must be inherited song, as I doubt if he has heard any wild performances at all. Three or four very fine cocks in the garden, while doing a little display to some quite interested ladies, have not opened their beaks yet, though as the year closes it is mild and damp here. Why does my bird sing his head off now, and up to 10 p.m. with his light on? This is a very deep mellow toned bird.

They vary so, one we had from a baby, never learnt his own lovely song, but only a rather vulgar whistle, which I am told is the mating call of some subspecies of the human race. This bird spent a whole summer in a garden aviary, and caused some consternation, as it did not seem appropriate that this G.I. whistle should sound eternally from the vicarage garden. How lucky we are to have this Blackbird song through the dark days of winter, and how little we thought on that May morning when we added yet another responsibility to many others, that we should be so richly repaid.

In the winter we keep the doves in an attic, six Barbarys, two albinos, two Turtles (1954), one cock Necklace. Eventually everybody will be married off to unlikely partners, the two albinos to the cock Necklace and cock Turtle, the lady Turtle to a Barbary swain, and the others



will breed at large. Our visitors have been slightly shaken by Barbary cocks cooing at all hours of the night. The consensus of opinion at first was that it was owls.

The cock Turtle, having been reared by Barbarys, two months after leaving the nest displayed slightly to a hen Barbary, but did not coo. The cock Necklace, though shy with humans, manages all the other doves.

On 2nd September a young Bullfinch, with no visible means of support and barely out of its pram, was picked up in the drive. The vicarage high chair had been out of commission for some ten years, but the baby was successfully reared and to-day, 29th December, the house revolves round Bullie. No attempt has been made so far to change into adult plumage, whether from financial reasons or sheer ignorance we don't know, but it is difficult to have a Christening if you don't know the sex of the baby. It spends a great deal of time sitting on us all, and still sways with its mouth open when spoken to. It loves sitting with a talking Budgie in his cage, but the Budgie is never allowed in Bullie's cage, which is really not fair.

Two Tree Sparrows were hand reared in August. While being hand reared they became delightfully tame, but after becoming self-supporting, became wild as hawks, and were turned into an aviary. The cock is now looking very smart and the hen is a slightly paler edition of her brother. They sleep in a nest-box every night; it is hoped they will breed in control.

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## COUNCIL MEETING

A Council Meeting was held on 9th March, 1955, in the Council Room, Zoological Society of London.

There were the following appointments :—

Elected Hon. Fellow : Professor Alessandro Ghigi.

Elected Hon. Life Member : Mr. J. Bailey, Mr. S. Williams.

### THE SOCIETY'S MEDAL

The Society's Medal was awarded to :—

Mr. T. Spence, for breeding the Purple-capped Lory, *Domicella domicella*.

Mr. E. N. T. Vane, for breeding the Canary-winged Parrakeet, *Brotozeris versicolurus chiriri*.

ARTHUR A. PRESTWICH,  
*Hon. Secretary.*



## STUDIES ON GREAT CRESTED GREBES

By K. E. L. SIMMONS (Tilehurst, Reading, England)

Illustrated by Robert Gillmor

*(Continued from page 13)*

## 2. ROUTINE AND GENERAL HABITS

*In spite of its being active only during the daylight hours, the Grebe spends many of these resting, in the attitude so well described by Selous as resembling a pork-pie.*

Julian Huxley, 1914 : 556.

*Grebes resting on the water frequently shake a leg above the back or roll, their satiny under parts flashing, as they preen their feathers.*

T. A. Coward, *The Birds of the British Isles*.

Research into bird life-history is apt to concentrate on the more spectacular aspects, for very understandable reasons. Still, birds spend a good deal of their time in rather humdrum, routine activities which are, nevertheless, full of significance to them and full of interest to the observer. This second section describes the general habits of the Great Crested Grebe. It is based mainly on my own notes but the paper of Hanzák (1952) has been a most useful source of extra detail on many points, especially feeding behaviour.

The two quotations above highlight an essential aspect of the grebe's daily life. At the Burghfield gravel-pits in winter the Great Crested Grebes alternate between long periods of relative inactivity, spent mainly in resting and preening, and bouts of diving for food. The hunting birds are spaced out in the shallower water near the main banks and islands. The resting birds tend to gather together very loosely, never in close packs, and sometimes a few mingle among flocks of Tufted Duck and Pochard. Paired birds may keep company during the resting periods but often separate afterwards. Some grebes show spasmodic, short-lived hostile behaviour, especially on finer days, but this is rarely serious. Attacks are very occasionally pressed home and are not always confined to other grebes. For instance, elsewhere I have seen a Goosander (*Mergus merganser*) "torpedoed" by a particularly pugnacious bird. Courtship of any sort is quite rare in November, though it may occur in December and January if the weather is mild.

From the time that the grebes first start to come into active breeding condition usually from February onwards at Burghfield, life becomes increasingly more complicated by the appearance of many extra activities. Time has now to be found for courtship, hostile behaviour, nest-building and so on. There is quite a hectic surge of reproductive patterns which cuts seriously into the time previously spent mainly



resting, preening, and digesting. Most feeding is now done in the early morning and late afternoon. When the incubation-period is reached much leisure is again available. Male and female usually meet now only at the nest, and display virtually ceases. When the young appear, there is a second period of increased activity, mainly in hunting, which is, however, not nearly so marked as in the pre-parental stages, and still leaves much time for the traditional resting and preening.

### *Swimming, Flying, and Walking*

Great Crested Grebes swim well on the surface, but really come into their element below the water, as I shall outline in the next section. When moving unhurriedly, they seem to glide effortlessly along with little or no visible action of head or leg to disturb the water, and with the neck held vertically. The body lies rather low in the water, not high like a gull, and the white underparts are usually invisible. Unless engaged in preening or carrying young, for example, grebes tuck their wings well away, tightly pressed to the flanks where they are covered over by the feathers, and against the back so that they do not protrude and break the smooth contour. When swimming quickly, the grebe inclines its neck forward to an angle of about 45 degrees, and may jerk the head a little. The surface-speed is from 3-7 kilometres an hour (Hanzák), that is approximately 1.8-4.3 miles per hour. However, as Coward (1920) points out, if a grebe wants to make real speed from place to place it will dive.

Grebes do not fly far once they have settled down on a home water. Short excursions, low down over the surface are not really infrequent, especially when birds are attacked by others. In this respect, most grebe species differ from the divers which spend a good deal of time on the wing. Great Crested Grebes must periodically fly from water to water, when migrating or performing weather-movements away from ice. They are good fliers when fully airborne. Their relatively small wings give them a high loading which demands a very rapid beat. According to Meinertzhagen (1955), this is somewhere in the region of 360-400 beats a minute (over 6 a second), approximately twice as many as a Mute Swan makes, and over three times as many as the Heron. In flight, the Great Crested Grebe's pattern and silhouette are unmistakable: the double white wing-patch is conspicuous, the legs extend backwards and slightly below the general level of the body, while at the other end the long neck sticks out with a slight droop in it.

Because of its small wings, the grebe does not find it easy to take off from the water. It has to patter some distance over the surface, legs moving alternately and wings waving, before it gets enough lift to



take it up. Then it must circle round and round many times to gain height. When landing, grebes approach the water at a narrow angle. Their feet start to come down as the surface nears, and may even skim it but, unlike most other aquatic birds, grebes alight breast first and skid forward some way before stopping.



Great Crested Grebe in flight.

Major journeys are made at night. Possibly, like water-beetles, Great Crested Grebes are attracted to a water glimmering in the moonlight. However, so far as I know, no death dives on to greenhouse roofs have ever been reported. There is one strange record, apparently reliable, of five grebes "resting" in a ploughed field near Chipping Norton on 20th February, 1949 (Report Oxford Ornith. Society). No other details were given, but it seems likely that these misguided birds were drawn down to a damp field shining in the moonlight. Perhaps the grebe found shuffling along in the public gardens in Market Street, off the Caledonian Road (London), in January of this year, had been similarly deceived by reflections.

The Great Crested Grebe can stand upright on land quite well, and even move short distances slowly and surely. Its efforts on the limited area of the nest, though by no means nimble, are not too grotesque. When it does have to cover much ground, though, a grebe's actions are ungainly and even pathetic because the legs are placed so far back on the body, forcing it to shuffle forwards on the flat of the tarsi. Grebes rarely come to firm land. Coward (1920) records that in fine weather they may leave the water to sun themselves on the bank. Not all grebe species move so clumsily on land, for Coward found that the Red-necked Grebe (*Podiceps griseigena*) walked easily.

#### *Diving and Hunting*

Great Crested Grebes dive for many reasons. For instance, this is their best means of travel, their method of obtaining most food and nest material, their way of safe escape from certain enemies, and so on. In the matter of escape, grebes dive from those foes that are capable



of following them underwater only when threatened from beyond a certain critical distance. Thus they fly and skid over the surface, and do not submerge if attack is imminent at close quarters, especially from underwater. They do, however, dive away from close approaching surface-bound predators such as gulls and man. Gulls will sometimes hover above hunting grebes in the hope of snatching a meal. Whether the latter have fish or not, they usually crash-dive suddenly if a gull comes too near. One grebe dived in this way when a Heron flew low over it. The simultaneous disappearance below the water of a whole grebe family in such circumstances is a striking sight.

When about to dive of its own will, a Great Crested Grebe usually stops swimming, sinks low in the water so that the neck is often awash, and depresses the tippits. Then with a forward swing of the neck it disappears smoothly below. This easylooking action obscures the power behind the dive. Because, in normal circumstances, there is no marked surface disturbance, the legs obviously do not kick back powerfully to play an important part in sending the grebe into the depths. Most of the initial impetus is obtained by the downward swing of the head, and probably also by a springing jerk of the body. This last is obscured because the bird's body lies so low in the water as the grebe reduces its buoyancy before diving. Sometimes, when the dive is made from a more buoyant floating or swimming position, the forward spring can be seen. When a grebe crash-dives in an emergency, it may then give a strong kick backwards and raise quite a spurt of water.

With the wing-feathers tightly folded and neck extended, the grebe is transformed underwater into an elongated, torpedo-like creature of great efficiency. The legs strike backwards together with force, maximum push being obtained by the expanded lobes and the flattened hind edge of the tarsi. Drag is reduced to a minimum in the forward movement: the toes are pressed together, lobes folded away, and the keeled front edge of the tarsi cuts through the water keenly. The length of time spent without surfacing varies and depends on many factors. The depth of the water itself is unimportant, as Hanzák points out. Generally, grebes spend less than half a minute underwater at a stretch, though some dives last nearly a minute. Hanzák, and Harrisson and Hollom give 24 and 26 seconds respectively as the average duration of a dive, with ranges of 12–56 seconds. In some circumstances, Great Crested Grebes can survive underwater for much longer periods: I once saw a bird held under the surface for at least three minutes by an aggressive rival, with no apparent ill-effects.

After emerging from a dive, a grebe may shake its head a few times, presumably to get rid of water droplets on the bill.

The Great Crested Grebe is essentially a fish-eater, and several



shallow-water species are taken. These are normally between four and six inches long, though much smaller ones are given to the young, and occasionally eaten by the adults. Many water-haunting insects are also captured but, compared with the total bulk of fish consumed, are a small if regular item of diet. Algae, pond-weeds, and other vegetable matter are also sampled (though the Great Crested is far less dependent on these things than the smaller Dabchick), and also spawn, crustacea, newts, and tadpoles. Grit has been found in the stomachs of dead grebes, and probably aids digestion.

It is in the role of fish-hunter that the grebe excels. The birds may fish at any hour of the day, especially in winter and when feeding young, though otherwise in the summer they tend to hunt mainly in the early morning and in the evening, as pointed out by Hanzák. In good light and on calm water, optimum conditions, the grebe can easily sight its prey from above when swimming slowly, looking downwards through the water. When it sees a suitable fish, it dives and pursues it. The eyes of a Great Crested Grebe, like those of all diving birds, are specially equipped for seeing under water efficiently. Problems of accommodation, and the loss of refractory properties by the cornea underwater, have been solved by a marked development of the muscle controlling the shape and thickness of the lens itself.



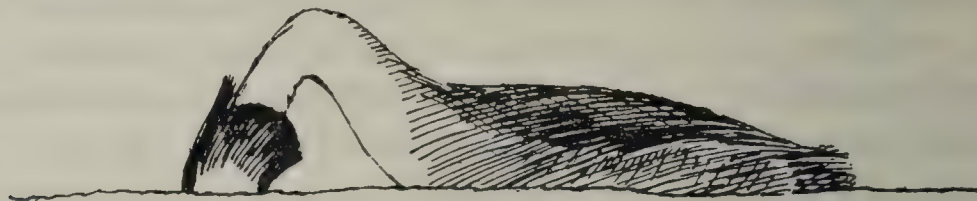
Swallowing a fish.

If a fish is caught it is always brought to the surface to be eaten. The grebe usually holds the wriggling creature firmly just behind the head, and may spend a little time in getting a suitable grip and in shaking it before swallowing. Sometimes the bird relaxes its hold, or even places the fish in the water to get a better grip. If the fish gets away, the grebe pursues it again, generally successfully. The fish is swallowed whole and alive, head first, sideways on. The struggles of a grebe trying to choke down a large one are fascinating to watch. The gourmand stretches its neck up and gulps away with marked ducking movements, bill wide open. So tiring is the whole business, that the grebe may pause for a rest. Then one can see the rather



macabre sight of a slowly beating fish-tail protruding from the wide gape and greatly distended throat. After swallowing slimy food, the grebe washes its bill. Because its staple diet is so bulky, the Great Crested Grebe can quite quickly eat its fill. It has no crop, of course, and fish pass straight to the stomach where they take some time to digest. Hence the long inactive periods. Hanzák states that the remains of one or two fish are normally found in the stomach of shot grebes, and cites the Czech record of one bird found to contain "one *Perca fluviatilis*, 12 cm. long, two *Acerina cernua* of 7 and 8 cm., two *Lucioperca lucioperca* 6 and 9 cm. long."

Sometimes, instead of peering down through the surface layer, the hunting grebe will submerge its head to just above eye-level and search in that way. It may swim about for several yards without



Hunting—head submerged.

raising its head, though often it remains dipping and turning on the spot. Hanzák says that this head-under-water hunting method is used only on windy days when the surface is rippled. I have seen it on calm days in summer as well when, I think, the grebes are looking for small, swimming aquatic invertebrates and also for tiny fish to give the young. Insects, etc., may be picked up on the surface and, occasionally, flying gnats snatched from the air, the grebe jumping up partly out of the water to do so, as first noted by my friend R. W. Crowe (1951). I once saw a moth taken in this way. When hunting in very shallow water, the bird may "up-end" rather clumsily, with only a small part of its rear visible.

Great Crested Grebes drink in the same way as most birds, scooping up water in the bill and then tipping back the head to allow the liquid to trickle down the throat. A minor point may be made about such ordinary actions as drinking and bathing. It might seem unnecessary for such an aquatic species to have to make deliberate efforts to do these two things. Yet, it is absolutely essential for grebes *not* to swallow water or to get wet except deliberately at selected times.

#### *Feather-eating*

This curious habit of the Great Crested Grebe, which it shares, apparently, only with other fish-eating grebe species, although well known, has not been properly understood until quite recently. Smaller contour-feathers are eaten, usually those that have come out during preening bouts. Adults will give feathers to their young, sometimes



after deliberately soaking them, and the chicks later learn to eat their own feathers and to pick up others floating on the water.

Various theories have been suggested to explain this behaviour, but Hanzák shows, convincingly I think, that none stand close examination. Although whole feathers from all areas of the body, especially the under parts, may be found in the stomach, these later break down into "a special mush-like substance, which under the microscope proves to be composed of fragments of radia and cilia of the swallowed feathers". This felt-like material envelopes the sharp parts of the food (fish bones and chitinous remains), and makes them easier to eject from the stomach.

#### *Resting, Preening, and other Comfort-Movements*

It is not surprising that a species with so much leisure as the Great Crested Grebe has developed quite a variety of comfort-movements, many of which have been modified to suit its aquatic way of life.



Resting.

When in the famous "pork-pie" attitude, with its head settled on its back and bill tucked away at the side of the neck, a resting grebe transforms itself into a compact bird quite unlike an active one with long, hosepipe neck. This relaxed position is assumed both in the water, where the grebe may sometimes swim forward without lifting its head, and on the nest. In the winter, and also in summer if they are not attached to a nest-site, the birds rest by day and roost at night in the open, deeper water. When nesting, they spend much of their rest-time in or near cover by the platform. A lone grebe, resting near a likely breeding place, is often an off-duty bird "on station" while its mate incubates out of sight in the vegetation.

The preening movements do not differ in any essentials from those of many other aquatic birds. The Great Crested Grebe has both the nibbling and the smoothing (or stropping) bill actions, the former for carefully dealing with individual feathers, the latter for the more general treatment of larger tracts. Special care is taken of the white underparts, as previously mentioned (p. 7). The grebe rolls over on its side in the water, bends its neck round and down, and strops away with closed bill. Both its legs stay in the water and sometimes it paddles the uppermost one to keep balance. I have never seen a Great Crested Grebe roll almost completely on its back as Guillemots (*Uria aalge*) and Razorbills (*Alca torda*) will do. Another conspicuous



and common activity is the preening of the upper throat: the grebe stretches up its neck to the full, tucks its bill down without bending the neck, and makes rather uncomfortable-looking up and down preening movements.

Intermittently during preening a grebe will shake its head to detach feathers, etc., from the bill.



Preening the throat.

While occasionally a bird dips its bill into the water before making preening movements, usually it squeezes the gland on the base of the back every now and then to obtain preen-oil. This is distributed by the bill to the various accessible feather tracts. The head itself is oiled by rubbing the nape and sides of the face on the gland, and these in turn may be smoothed against other parts of the body, particularly the flanks. Often when a grebe is oiling itself, the small bunch of feathers, which is its apology for a tail, sticks up almost vertically. Probably this has something to do with the opening of the gland itself.

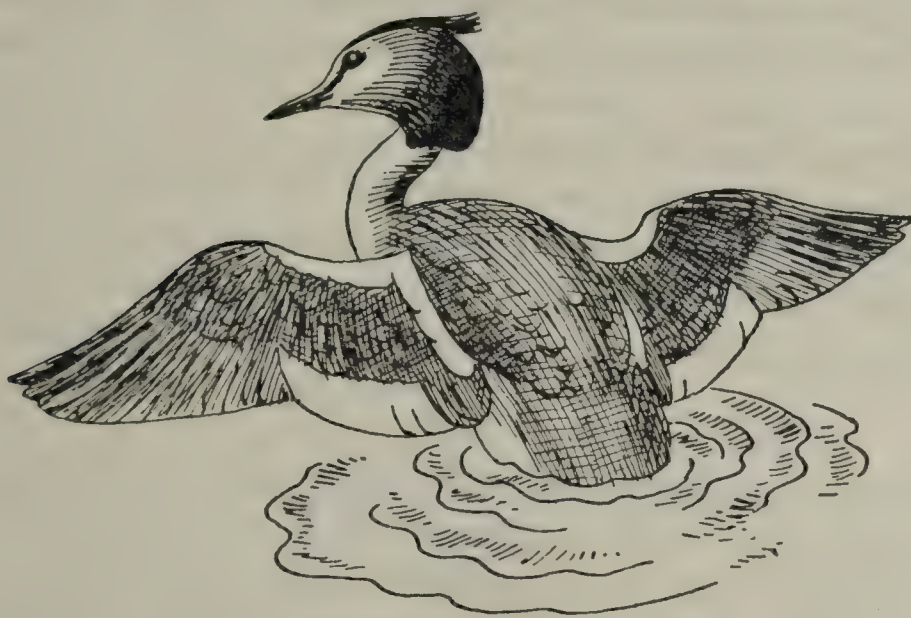
It is very significant that two activities connected with preening—tail elevation, and the shaking of the head—are also found in the head-shaking courtship display. Further, “habit-preening” a ritualized displacement-preening movement in which the bird jerkily bends its head back and symbolically raises some of the wing feathers, is a common accompaniment of the display. All this suggests that the head-shaking courtship is partly derived from functional preening. This will be discussed more fully in a later section.

In scratching the head the Great Crested Grebe rather reminds me of a dog as it bends its head down and brings the leg straight up without lowering the wing. There are several stretching movements. When performing the familiar simultaneous extension of foot and wing, the grebe sees to it that the wing does not enter the water. The wing-gliding movement shows the white secondary patches up conspicuously as the wings are held out horizontally over the water, still or gently waving, perhaps for several seconds at a time before being flicked to a close. The forward stretching of the neck right out along the water, with only the head raised, is quite a bizarre sight, while the



waving of one foot in the air, as the grebe lies leisurely over on one side in the water, is another characteristic pose of the relaxing bird. Sometimes the tarsal joint may be straightened and the foot extended right back behind the body, so that it lies on, or just below, the surface. The grebe may even swim forward with one leg inactive like this.

Body-shaking is another common habit. The grebe stops swimming and pauses fractionally, so that it may drift back on its course slightly. It fluffs out the body feathers and then, swimming on again, lunges forwards and upwards, partly out of the water, with neck extended, before resettling, feathers back in place. When lunging the grebe momentarily looks rather like a white rounded bottle with a straight long neck. Wing-flapping also follows a similar pause in swimming.



Wing-flapping.

The bird rises in the water and rapidly flaps its fully open wings a few times. Strangely enough, Kilham (1954) seems to mistake this extremely common comfort-movement, which most water-birds have, for a form of courtship in the Pied-billed Grebe (*Podilymbus podiceps*).

#### *Bathing*

Although grebes are continuously in the water they still need to bathe now and then for, normally, of course, no water gets past the well oiled outer layer of feathers. The bird uses special movements to wet itself. These are, principally, a vigorous ducking-scooping action of the head, followed by the shuffling and beating of the folded and partly submerged wings. All this throws water over the neck and body. Preening, body-shaking, wing-flapping, and all the other comfort-movements follow and interrupt the bathing ones.

Sometimes, bathing takes on a special, rather "frantic" looking form. Instead of calmly shuffling and beating the wings, with the body in the usual horizontal swimming position, a grebe may do these movements exceptionally violently while swimming forward with very



powerful use of the feet, and with the body upright, almost vertical in the water, rear-end fully submerged. The tippits are expanded, unlike in normal bathing when they are relaxed. The head may stay still, neck curved, or be stretched down the back doing rubbing, oiling movements of a particularly rapid kind. I have only rarely seen the start of this strange performance which no words of mine can describe convincingly. Three times it has followed aggressive encounters with other grebes, and twice crash-dives—once definitely after the close approach of a Black-headed Gull (*Larus ridibundus*). Once the behaviour has been initiated, however, *no diving occurs*, and sometimes the grebe submerges its head, obviously *looking below the surface* for something. All this suggests a type of “escape” bathing, vaguely resembling that recorded in ducks (Lebret, 1948). The latter, however, perform the definite actions of escaping from a flying hawk, though no such enemy is actually present. Lorenz (1954), speaking generally of this sort of behaviour, emphasizes that the emotion normally responsible for it is absent in the “play” version. The behaviour of the Great Crested Grebe seems psychologically different: I believe that it actually feels afraid in an indefinite way, and has some underwater predator “in mind”, probably the pike.

#### Voice

Though not so weird as the wails and moans of the divers on their breeding pools, the voice of the Great Crested Grebe is certainly strange to human ears, being chiefly made up of barking, throaty, and rolling sounds. As would be expected in a species of no great intelligence, the grebe has a stereotyped vocabulary, each call being the expression, more or less, of a definite mood. An experienced observer can thus tell quite easily what a hidden bird is doing by the sound of its voice. The more important of these calls will be described in the appropriate sections dealing with the behaviour associated with them.

Great Crested Grebes are most vocal when in reproductive mood, their notes then being mainly expressions of hostile, self-assertive or sexual tendencies. Because it is very specialized for visual display, the Great Crested Grebe has not a very elaborate vocabulary. On the other hand, the Dabchick, that relative plain-Jane of grebes, partly makes up in its voice for what it lacks in display structure. I believe that the “trilling” of Dabchicks, often performed in duet, largely takes the place of the usual head-shaking display of the bigger bird.

(To be continued)

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## LONDON ZOO NOTES

By J. J. YEALLAND

A further examination of the Sierra Leone Sunbirds has revealed that one of the supposed Kemp's Olive-bellied was a Tiny (*Cinnyris minullus*). This is of interest because of being the first record for Sierra Leone. The birds are so alike that they could scarcely be distinguished except on very close examination. One of the Superb has proved to be the Crimson-chested Superb (*C. johannae fasciata*), a subspecies of Madame Verreaux's or Johanna's Sunbird of further east.

At the Society's scientific meeting in February, Mr. Lester showed a film of the Picathartes nesting. One wonders how such a bird, presumably unable to cling to an overhanging rock face as, for instance, a Martin would do, is ever able to build its mud nest in such a place.

The taxonomic problem set by these curious birds was humorously illustrated in the course of the subsequent discussion, when Mr. MacDonald, the Keeper of Birds at the Natural History Museum, read Mrs. B. P. Hall's verse :

What is this bird,  
 Pied, bald, absurd,  
 What is this Picathartes ?  
 "It's not a crow," said Dr. Lowe,  
 "Let's cut him up, my hearties.  
 This ugly fowl with painted jowl ;  
 Its oddities concern us ;  
 Now bone by bone has plainly shown  
 It's cousin to the *Sturnus*."  
 But Amadon has frowned upon  
 And called this name a failure,  
 "And what is more," said Delacour,  
 "It's allied to *Timalia*."  
 Now Dr. Serle has joined the whirl,  
 And thus begins his treatise,  
 Ignoring place by form and face,  
 He says it's like *Eupetes*.  
 Though this is queer, he thinks it's clear,  
 He's seen the brute moreover ;  
 The creature lays, or so he says,  
 Pyrrhocoracian ova.

Those who have seen the living birds will probably agree with Delacour and Amadon (*Ibis*, vol. 93, p. 60) when they say, "... we believe that Picathartes has far more in common with babblers than with starlings, crows, or other passerine families."



Three Red-crested Bustards (*Lophotis ruficristis*), new to the Collection, have been presented by the Antwerp Zoo. Others not exhibited before in Regent's Park are a Malayan White-collared Kingfisher (*Sauroptis chloris humii*), and an Eastern White-breasted Waterhen (*Amaurornis phoenicurus chinensis*), both presented by Squadron-Leader K. C. Searle, who also sent a Lesser Blue-winged Pitta (*Pitta cyanoptera*); four Malayan Glossy Starlings or Glossy Calornis (*Aplonis panayensis strigatus*); two Nutmeg Pigeons (*Ducula bicolor*), and an Eastern Grey-headed Gallinule, which used to be known as Milne-Edwards' Gallinule (*Porphyrio poliocephalus viridis*).

A further twelve Budgerigars have been presented, bringing the number in the new aviary to over a hundred.

\* \* \*

## BRITISH AVICULTURISTS' CLUB

The forty-sixth meeting of the Club was held at the Rembrandt Hotel, Thurloe Place, South Kensington, S.W. 7, on Wednesday, 9th March, 1955, following a dinner at 7 p.m.

Chairman : Miss P. Barclay-Smith.

Members of the Club : Mrs. H. G. Alderson, P. C. Bath, Hylton Blythe, Miss K. Bonner, Mrs. V. M. Bourne, Captain A. A. Clarence, T. Crewes, A. H. D'Aeth, Sir Godfrey Davis, W. T. Dring, Mrs. W. T. Dring, B. H. Dulanty, O. E. Dunmore, Sqd.-Ldr. C. Everitt, Miss S. A. Fothergill, Miss B. Francis, J. C. Garratt, Miss D. Gask, A. G. Glenister, F. Grant, H. J. Harman, R. E. Heath, Dr. E. Hindle, Dr. R. S. Kirk, Miss E. M. Knobel, Miss M. H. Knobel-Harman, Dr. F. B. Lake, Mrs. E. M. Lonsdale, G. C. Lynch, P. H. Maxwell, G. S. Mottershead, S. Murray, Miss E. G. Perry, S. Porter, A. A. Prestwich, Miss A. Reed, D. H. S. Risdon, R. C. J. Sawyer, H. A. Snazle, A. C. Soanes, P. Sutton, J. A. Swan, E. H. Tong, E. N. T. Vane, N. S. Walker, H. Waller, C. H. Wastell, H. Wilmot.

Guest of the Club : D. Seth-Smith.

Guests : Dr. K. Aylwin-Gibson, J. Bailey, Mrs. P. C. Bath, Professor J. Berlioz, E. St. J. Blunt, M. E. Chatfield, B. R. Cordwell, S. A. Croucher, Mrs. S. A. Croucher, Lady Davis, Mrs. O. E. Dunmore, Mrs. C. Everitt, D. C. Garratt, Miss H. Gentry, Mrs. F. Grant, Mrs. F. B. Lake, Miss D. G. Lonsdale, H. M. Luther, Sir Philip Manson-Bahr, Lady Manson-Bahr, Mrs. S. Murray, Mrs. G. H. Palmer, C. M. Payne, Mrs. C. M. Payne, J. Roddis, Mrs. M. E. Roddis, A. H. Rudd, Mrs. A. H. Rudd, S. Sanderson, Mrs. D. Seth-Smith, Dr. D. W. Seth-Smith, Mrs. D. W. Seth-Smith, A. E. Sibley, Mrs. E. Stewart, Mrs. P. Sutton, Mrs. J. A. Swan, R. A. Taylor, Mrs. E. H. Tong, Mrs. D. F. Waller, Mrs. H. Waller,



Mrs. C. H. Wastell, Miss H. Wastell, L. R. Williams, Mrs. H. Wilmot, W. A. Wood, A. J. Woods.

Members of the Club, 49 ; guest of the Club, 1 ; guests 46 ; total, 96.

After the Loyal Toast the Chairman said that by a happy chance the date of the meeting coincided with that of two birthdays—Mr. Jim Bailey and Mr. David Seth-Smith. After the members and guests had responded to the toast of “ Mr. James Bailey ”, the Chairman gave a brief outline of the very long, intimate connection Mr. Seth-Smith had had with the Society, from its foundation in 1894, when he was a dashing young man of 19, to the present day, his eightieth birthday.

After drinking Mr. Seth-Smith's health, the lights were lowered, the toast-master brought in a birthday cake blazing with eighty candles, and the company rendered a somewhat unmusical vocal birthday refrain.

Dr. D. W. Seth-Smith said he most sincerely thanked the Club for the honour it had done his father. And, being in reminiscent mood, he went on to say that some of his earliest boyhood recollections were of aviaries, birds, and their breeding ; and later, of a mysterious publication, the production of which seemed to clutter up most of the house, and, on certain days of the month, necessitated complete quiet, as “ father was busy with his magazine ”.

Mr. Seth-Smith then said how delighted he was to be the recipient of so many good wishes, and he greatly appreciated the great welcome the Club had given him. His long association with the Society had given him much real pleasure. He had watched it grow from its very modest beginning with little more than a pamphlet of only a few pages, into a Society with a world-wide membership and a Magazine in the forefront of ornithological journals. And, he was delighted to say, in the whole of its history it had never been in a more flourishing state, in no small measure due to the efforts of the members of the Club. He could wish nothing better than that both should enjoy even greater success in the future.

The Chairman said how honoured and delighted the Club was to have as a guest Professor Jacques Berlioz, of the Paris Museum of Natural History.

The speaker for the evening, Sir Philip Manson-Bahr, really needed no introduction, being one of the Club's favourite guests. Sir Philip and Lady Manson-Bahr have but recently returned from East Africa, where they visited four of the big Game Reserves. Sir Philip showed a collection of his paintings, Kodachrome slides, and coloured films, combined to illustrate “ African Adventure ”, and gave a running commentary in his own inimitable manner. The most remarkable part of the showing was a series of surely unique photographs of Kilimanjaro at sunrise. We were also shown excellent pictures of



elephants, rhinoceroses, buffaloes, giraffes, zebras, lions, hyaenas, hippopotami, and various deer ; also of pelicans, cormorants, ibises, storks, crowned cranes, bustards, white-headed eagles, peregrine falcons, Egyptian geese, and numerous ducks.

At the conclusion the large audience showed by its applause, which without exaggeration could be described as vociferous, that it had fully appreciated Sir Philip's efforts to instruct and entertain it.

The next meeting of the Club is on **11th May, 1955.**

ARTHUR A. PRESTWICH,  
*Hon. Secretary.*

\* \* \*

## NEWS AND VIEWS

Professor Alessandro Ghigi, of Bologna, celebrated his eightieth birthday on 9th February, 1955, and a telegram of congratulations was sent by the President and Council of the Avicultural Society.

\* \* \*

Last season, 1954, Norman Nicholson bred Red-headed Parrot Finches to the twenty-second generation.

\* \* \*

R. A. Patten retired recently from Taronga Park and has recommenced a veterinary practice in Kellyville, N.S.W.

\* \* \*

Adelaide Zoo.—Amongst the birds bred recently are : Two broods of Egyptian Geese, 4 Swinhoe's Pheasants, 3 Ruddy Sheld-Ducks, 2 Leadbeater's Cockatoos, Crimson-winged and Queen Alexandra's Parrakeets.

\* \* \*

M. Walter Van den bergh, Director, Société Royale de Zoologie d'Anvers, has been granted the Croix de Chevalier de l'Ordre de Leopold by the King of the Belgians, and has also been created an Officier avec couronne de l'Ordre du Mérite Civil et Militaire d'Adolphe de Nassau by the Grand Duchess of Luxembourg.

\* \* \*

A. H. Isenberg, Woodside, California, has now completed his new greenhouse aviary : this houses 170 birds of 80 species. There are now over 800 birds (all soft-bills) in the Isenberg collection. 1954 again produced five Ptilogonys and two Indian Brown Robins—the latter nesting in boxes. Grey Struthideas had five nests and seven young but none was reared, due to too many other birds in the



same aviary. White Eyes reared three and a pair of Jilgieros sat on eggs but none hatched.

\* \* \*

P. W. Teague still manages to hatch and rear a few Gouldians, just to keep his record intact—since 1926. A really outstanding nesting record was put up by a pair in the autumn of 1950. They had three nests in quick succession—in fact the second nest of eggs was laid in the same nest before the first youngsters had left it. First nest, 8 eggs, all hatched and reared; second nest, 8 eggs, again all hatched and reared; third nest, another 8 eggs, 7 hatched and reared but two young died later on. Twenty-one of the 23 young hatched were fully reared and passed safely through their first moult!

A. A. P.

\* \* \*

## REVIEW

VOGEL IN KAFIG UND VOLIERE (Cage and Aviary Birds). By Dr. JOACHIN STEINBACHER and H. E. WOLTERS, with the collaboration of numerous other ornithologists. 1st Part: DIE PRACHTFINKEN (Waxbills). In approximately 22 sections. H. Limberg, Aachen, 1954-55. Price DM. 2.80 per section.

This is a most valuable work of great interest to aviculturists. A short description is given of each species, with details of its distribution, races, and account of the song, calls, nesting, and behaviour in the wild. This is followed by full information on the bird in captivity, with details of importations, its reactions to captivity, conditions necessary to maintain it in good health, food, breeding, etc.

The text is illustrated with black and white drawings of the birds, which are unfortunately not of very high standard, and maps showing distribution. In addition are coloured plates depicting several species, for instance there is one of the Waxbills of Senegal and another of those of East Africa. The names of the birds are given in Latin, German, English, French, and Dutch.

Each Section contains about twelve pages, and it is somewhat irritating that they sometimes end in the middle of a sentence. So far, Sections 1-9 have appeared, and deal with forty-four species.

Dr. Steinbacher is well known to all readers of the *Avicultural Magazine*, and all those interested in this group of birds should certainly take advantage of his wide knowledge and experience, by obtaining this work. A loose-leaf binder to hold the Sections is issued, and can be purchased from the publishers, price DM. 3.40.

P. B-S.



## MEMORIAL TO THE LATE DUKE OF BEDFORD

The memorial plaque which is to be placed in front of the liberty Budgerigar Aviary at the London Zoo, will be unveiled by the Duke of Bedford at 12.15 p.m., on Monday, the 18th April, 1955.

Subscribers to the Duke of Bedford Memorial Fund who wish to attend the ceremony are asked to communicate with the Hon. Treasurer, Mr. R. C. J. Sawyer, 226 Haggerston Road, London, E. 8, who will forward an invitation.

\* \* \*

## NOTE

## SULA ISLAND KING PARRAKEET

At some time between 1930 and 1936, the late Duke of Bedford received a newly-imported Sula Island King Parrakeet. It was in poor plumage, and as it showed no sign of improvement, it was given during 1936 to a lady at Merton Park, Surrey. This bird is still living, and in 1954 it laid an egg. It appears to be in good health with no sign of senility, but its plumage is still in a poor condition in spite of years of good treatment and a largely outdoor life during summer.

J. J. YEALLAND.

\* \* \*

## CORRESPONDENCE

## PROFESSOR CARL NAETHER'S ARTICLE: "SOME REFLECTIONS OF A SOFTBILL ENTHUSIAST"

I do not write this as a condemnation of a great softbill keeper, who I fully realize is worthy of my respect, and has done much for the softbill fancy in general. On the whole, I thoroughly enjoyed his article, and certainly learnt a few points from it, but was extremely disappointed at his attitude towards breeding. To my mind, the establishing of aviary strains by breeding is the highest attainment possible in aviculture, and I say this as a keen exhibitor and judge, with an interest in all phases of aviculture. A casual, disinterested attitude by experienced and respected fanciers must of necessity do harm by discouraging others of less experience from trying their hand at achieving results as breeders. I feel deeply on this subject as practically all the few foreign softbills left in Australia are the result of one fancier's efforts; the same interest by other fanciers who had breeding pairs would have meant a far larger and varied foreign softbill population than there now is in Australia.

Fanciers everywhere must realize an import ban or misguided protection bill could easily put them in a similar position. It is up to all keepers of softbills to try to breed them, and for all who have done so to place their experiences in the hands of the Editor. Then others like myself, who are keen to become successful breeders, can use their experiences as guidance and this will also encourage others to try their hand at breeding, when I'm sure they will find the most pleasing song of all comes from a nest of lusty young calling for food.

ROY A. SCOTT.

1 LAMBTON ROAD,  
BROADMEADOW,  
N.S.W., AUSTRALIA.



## MARKED WHITE ZEBRA FINCHES

As I was the originator of this variety, it is with some concern I read of Mr. Edward Boosey's continued reference to them as "Chestnut Flanked Zebras" and must assume that the stock he has is of very poor quality. Good specimens of this variety have the cheek patches, barring on the chest, and markings on the flanks just as strong as in the grey variety. In consequence the name "Chestnut Flanked" in no way describes the bird. Admittedly the name "Marked White" is not very imaginative but it does, to a small extent, describe the bird. Perhaps when Mr. Boosey sees some good specimens he may suggest a more suitable name.

Although I was the first to breed the "Marked White" Zebra Finches in Australia, I had nothing to do with the name eventually adopted.

183-5 GEORGE STREET,  
BRISBANE, AUSTRALIA.

N. V. WHITEHOUSE.

## THE USE OF NECTAR IN FEEDING BIRDS

With reference to the recent correspondence on the use of artificial nectar for feeding birds, my own experience may be of some interest to your readers.

While waiting for feeding bottles of the type in use at the London Zoo to be sent from England, I have been forced to fall back on small open china vessels to feed my sunbirds (the Malayan Yellow-breasted) housed in a mixed garden aviary.

It was to be expected that Zosterops would make use of this food, but I was intrigued to observe that Yellow-crowned, Red-whiskered, and Red-vented Bulbuls, Pekin Robins, Malaysian Glossy Tree Starlings, and even a Lesser Blue-winged Pitta all took the liquid avidly. My original delight at having an additional constituent for the diet of these birds has since been tempered by the constant watch that is necessary to prevent the sunbirds being starved! However, this minor drawback will be easily remedied when the glass feeding tubes arrive. Although I have some of the species of seed-eaters mentioned by Mr. C. R. Podmore in the same aviary, I have yet to see them, or any of the other finches present, visit the nectar pots.

It is a common sight in Singapore to see parties of Yellow-vented Bulbuls feeding on the blossoms of garden trees, and when such trees are flowering they will often be swarming with the above and sunbirds, and one is forced to the conclusion that with this species at least nectar is normally taken by bulbuls when available.

STATION OFFICERS' MESS,  
R.A.F., CHANGI,  
SINGAPORE, 17.

KENNETH C. SEARLE.

## WALTER GOODFELLOW

I was very sorry to read in the *Avicultural Magazine* of the passing of Walter Goodfellow. He was undoubtedly a first-class collector and ornithologist, and his early travels showed that he was a man of much courage with the same spirit as the great explorers.

When I was in Papallacta, an Indian village on the east side of the Andes of Ecuador, situated at about 11,500 feet, I met a half-Indian blow-gunner who, in the course of conversation, told me of a man named Señor Goodfellow who had passed that way some twenty-four years before. When I said I knew him well his face beamed, and he said with some feeling, "he was a great man." With that simple tribute I think all who knew him will agree.

THE ROYAL ZOOLOGICAL SOCIETY OF IRELAND,  
PHOENIX PARK,  
DUBLIN.

CECIL S. WEBB.



# THE AVICULTURAL SOCIETY RECEIPTS AND PAYMENTS ACCOUNT

Year ended 31st December, 1954.

RECEIPTS				PAYMENTS			
	£	s.	d.		£	s.	d.
To Balance at Bank, 1st January, 1954 . . . . .				By Printing of Magazine . . . . .		1,061	15 1
" Ordinary subscriptions . . . . .				" Coloured plates . . . . .		192	17 9
Arrears . . . . .	48	2	3	" Authors' separates . . . . .		10	1 6
Current . . . . .	719	17	10	" Printing <i>The Anatinae</i> . . . . .		69	18 6
In advance . . . . .	118	11	6	" Sundry printing and stationery . . . . .		52	16 4
Life membership subscriptions . . . . .				" Printer's charges and expenses . . . . .		6	6 6
" Avicultural Society of America . . . . .				" Honorarium to Editor . . . . .		100	0 0
Balance, 1953 . . . . .	16	10	0	" Secretarial . . . . .		52	0 0
1954 . . . . .	128	0	0	" Preparation of Index . . . . .		10	10 0
Donations . . . . .	144	10	0	" Newman Library insurance . . . . .		2	5 0
" Sales of Magazines . . . . .	100	6	2	" Advertisements . . . . .		15	0 0
" Sales of <i>Australian Parrots</i> . . . . .	61	18	4	" Expenses at Council Meetings . . . . .		4	5 0
" Sales of <i>The Anatinae</i> . . . . .	22	15	10	" Medals and engraving . . . . .		9	11 3
" Sales of surplus books . . . . .	46	8	6	" Donations . . . . .		20	10 0
" Sales of waterfowl rings . . . . .	159	0	0	" Postages . . . . .		31	13 6
" Sales of coloured plates . . . . .	1	17	0	" Bank charges . . . . .		12	2 2
" Sales, Miscellaneous . . . . .	2	18	6	" Miscellaneous expenditure . . . . .		9	9 6
" Advertisements . . . . .	5	5	0				
" Dividends . . . . .	1	6	3				
	36	4	4	" Balance at Bank, 31st December, 1954 . . . . .		1,649	12 1
						715	5 11
						£2,364	18 0

I have examined the above Account with the books and vouchers of the Society and certify it to be in accordance therewith. I have verified the Bank Balance.

LONDON.  
17th February, 1955.

J. WATKIN RICHARDS, } Hon. Auditor.  
Certified Accountant.



## CANDIDATES FOR ELECTION

- F. C. ASTLES, The Aviaries, Magpie Hall Road, Kingsnorth, Ashford, Kent. Proposed by Hylton Blythe.
- S. AQUILINA, 30 Hart Street, Semaphore, South Australia. Proposed by Miss K. Bonner.
- D. BEAN, Netherfield, Inverurie, Aberdeenshire. Proposed by Miss K. Bonner.
- Dr. S. BERGMAN, Rönninge per Stockholm, Sweden. Proposed by C. af Enehjelm.
- N. A. BERRY, Parattah, Tasmania, Australia. Proposed by A. A. PRESTWICH.
- A. L. G. DE KANTER, 22 Thwaite Street, Cottingham, E. Yorks. Proposed by Miss K. Bonner.
- B. N. DOUETIL, 4 Home Farm Close, Thames Ditton, Surrey. Proposed by Miss K. Bonner.
- A. D. FISHER, Lower Cathill Farm, Penistone, Sheffield. Proposed by G. Beever.
- J. W. HARRIS, "Roysden," Mayfield, Sussex. Proposed by H. A. Fooks.
- L. HOFFMANN, Tour du Valat, par Le Sambus, B.D.Rh., France. Proposed by Miss P. Barclay-Smith.
- G. HUGHES, "Ramblers," Amos Lane, Wednesfield, Wolverhampton. Proposed by Miss K. Bonner.
- R. KREUGER, Stockholmsgatan 17, Helsingfors, Finland. Proposed by C. af Enehjelm.
- K. J. LAWRENCE, The Street, Hatfield Peverel, Essex. Proposed by G. E. Whitmore.
- T. J. McLAUGHLIN, The Bungalow, Gordon Avenue, Foxrock, Co. Dublin, Eire. Proposed by R. G. Kirkham.
- J. O'NEILL, 5 Conde Barão, Lisbon, Portugal. Proposed by J. F. Simões.
- W. F. PALSSON, Halldorsstadir Laxardal, via Husavik, Iceland. Proposed by Miss K. Bonner.
- A. G. PONTING, North Owersby, Lincoln. Proposed by Miss K. Bonner.
- S. SANDERSON, 33 Cardinal Avenue, Boreham Wood, Herts. Proposed by A. C. Soanes.
- K. E. L. SIMMONS, Lamorna, Beechwood Avenue, Tilehurst, Reading, Berks. Proposed by Miss P. Barclay-Smith.
- Mrs. B. G. STRACHAN, The Garden Cottage, Thornsflush, Cranleigh, Surrey. Proposed by Miss K. Bonner.
- D. N. V. TOPLIS, Shell Company of West Africa, Ltd., Private Mail Bag 2052, Lagos, B.W.A. Proposed by H. Stiven.
- G. F. TOWNSEND, 94 Littledean Hill, Cinderford, Glos. Proposed by Miss K. Bonner.
- W. VAN MAARION, Nelson Aviaries, 715—6th Street, Nelson, British Columbia, Canada. Proposed by A. A. Prestwich.
- H. G. WARNER, 83 Sherbourne Road, Bushbury, Wolverhampton, Staffs. Proposed by Miss K. Bonner.
- Dr. B. WARREN, Curlewis, 86 Crescent Road, Newport, N.S.W., Australia. Proposed by L. C. Webber.

## NEW MEMBERS

The twenty-six Candidates for Election in the January-February, 1955, number of the AVICULTURAL MAGAZINE, were duly elected members of the Society.

## CHANGES OF ADDRESS

- O. E. DUNMORE, to 31 Mickleton Drive, Evington, Leicester.
- H. A. FOOKS, to The Oast House, Down Lane, Frant, Sussex.
- D. P. HORNE, to Lloyds, Leadenhall Street, London, E.C. 3.
- Dr. WOLFGANG MERCK, to Rupert Strasse 55, Hamburg-Nieusteden, Germany.
- G. T. MURRAY, to 4235 Ohio Street, Gary, Indiana, U.S.A.
- R. A. PATTEN, to "Dunromin", Windsor Road, Kellyville, N.S.W., Australia.
- C. M. PAYNE, to The Malt House, Barford, Warwick.

## CHANGE OF NAME AND ADDRESS

- Miss B. ADAMSON, to Mrs. B. FIELD, Whitebrook, Widbrook Common, Cookham, Berks.

## DONATIONS

(Coloured Plate Fund)

		£	s.	d.
A. LAMB	.	2	2	0
J. SEAGO	.	1	2	0



## MEMBERS' ADVERTISEMENTS

*The charge for Members' advertisements is ONE PENNY PER WORD. Payment must accompany the advertisement, which must be sent on or before the 15th of the month to A. A. PRESTWICH, 61 CHASE ROAD, OAKWOOD, N. 14. All members of the Society are entitled to use this column, but the Council reserves the right to refuse any advertisements they consider unsuitable.*

### WANTED

A Pair of Chukor Partridges.—A. C. FURNER, Oakdene, 155 Whitaker Road, Derby.

Two female Ring-necked Parrakeets and pairs of British Grey Geese.—A. F. MOODY, Lilford, Oundle, Peterborough.

Pairs Rosella, Mealy Rosella, Pennant's, Adelaide, Princess of Wales's, King, Bourke, Blue-bonnet, and Red-rumped Parrakeets.—G. EOUCHARD, 28 Rue Albert 1<sup>er</sup>, Dunkerque, Nord, France.

Scaup duck, Tufted and Shoveler drakes.—W. G. SALMON, Angley Lake, Cranbrook, Kent. Tel. : Cranbrook 2225.

### FOR SALE

Fischer's and Masked Lovebirds, hatched July, 1954, in perfect condition, from outdoor aviaries.—K. GREENWAY, Park Lane, Long Handborough, Oxford.

Surplus copies of coloured plates that have appeared in recent numbers of the Magazine, suitable for framing. Mountain Blue Robins, Green-headed Olive Sunbirds, Scarlet-tufted Malachite Sunbird, Hartlaub's Touraco, Blue-shouldered Robin-Chat, Scarlet Flycatchers, Wattled Starlings, Ceylon Blue Magpie, Falcated Teal, Rock Grass Parrakeet and Elegant Grass Parrakeet, Lineolated Parrakeets, Brown-headed Parrot, Red-bellied Conure, Yellow-cheeked Conure. Price 1s. each, post free, from the HON. SECRETARY, 61 Chase Road, Oakwood, London, N. 14.

### MINISTRY OF WORKS

Applications invited for the post of Bird-keeper, St. James's Park, London, S.W. 1. Applicants must possess experience of care of ornamental wildfowl, hand-rearing, feeding, ringing, etc. Standard wage £7 6s. per week. Average earnings £8 14s. per week. House provided. Apply to : Bailiff of Royal Parks, Room 319B, Ministry of Works, Lambeth Bridge House, S.E. 1, not later than 11th April, 1955.



# AVICULTURAL MAGAZINE



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# THE AVICULTURAL SOCIETY

Founded 1894

**President : A. Ezra, Esq., O.B.E.**

**Hon. Secretary and Treasurer : A. A. Prestwich, 61 Chase Road,  
Oakwood, London, N. 14.**

**Assistant Secretary : Miss Kay Bonner.**

Membership Subscription is £1 per annum, due on 1st January each year, and payable in advance. Life Membership £15. Subscriptions, Changes of Address, Names of Candidates for Membership, etc., should be sent to the Hon. Secretary.

## THE AVICULTURAL SOCIETY OF AMERICA

**President : M. Jean Delacour.**

**Secretary-Treasurer : Ivo Lazzeroni, 5034 Templeton Street, Los Angeles 32,  
California, U.S.A.**

The annual dues of the Society are \$3.50 per year (foreign dues \$3.75 or £1 7s.), payable in advance. The Society year begins 1st January, but new members may be admitted at any time. Correspondence regarding membership, etc., should be directed to the Secretary-Treasurer. Members of the Avicultural Society may become members of the Avicultural Society of America on payment of \$1.00 per year.

## THE AVICULTURAL MAGAZINE

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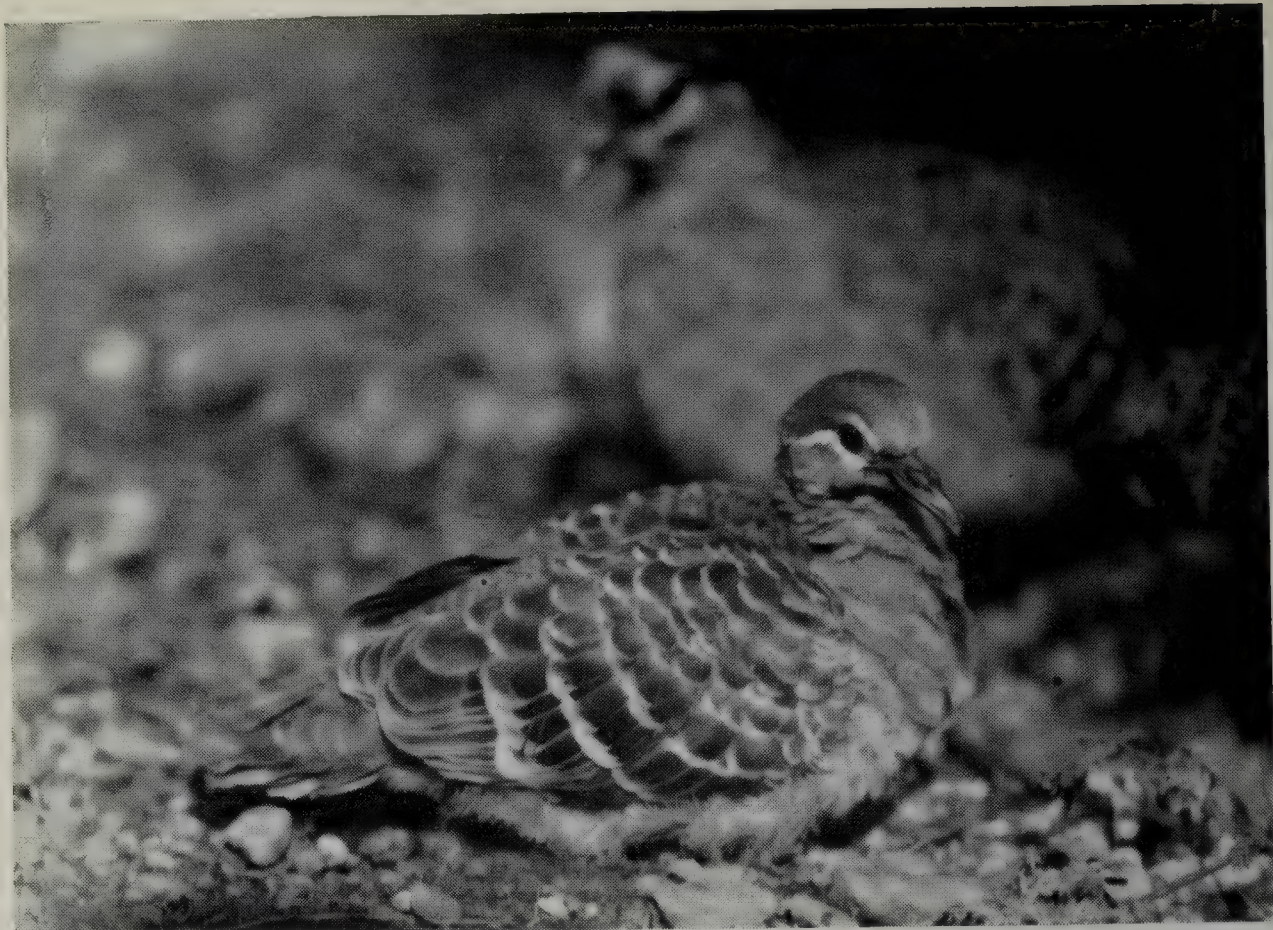
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YOUNG COMMON BRONZEWING (*Phaps chalcoptera*).  
Adult in background.



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BRUSH BRONZEWING (*Phaps elegans*).  
The cock brooding young.

Frontispiece]



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## THE BRONZEWING DOVES OF AUSTRALIA

By DAVID SETH-SMITH (Guildford, Surrey, England)

The various foreign pigeons and doves are not, perhaps, amongst the most popular of aviary birds, but they are certainly very attractive and, although not so gaudy in plumage as some of the aviculturist's favourites, are by no means lacking in beauty. For my part, I was always very attracted by some of the Australian species, especially those belonging to the group known as the Bronzewings, a name derived from the patch of lustrous, iridescent feathers carried, to a greater or lesser extent, on the wings of all of them. In none is this more pronounced than in the so-called Common Bronzewing (*Phaps chalcoptera*), call it pigeon or dove as you please, which is the largest, and to be found in almost all parts of the Australian continent, inhabiting mostly the scrub country.

Although the chief colour of this bird is brownish-grey, the forehead of the male is buff, the breast pinkish, and the secondaries and wing-coverts glistening bronze, changing in varying lights to purple, green, and coppery red. When viewing a cock Bronzewing as it reposes on the ground in brilliant sunlight, one is struck by its dazzling beauty. The sexes are easily distinguished as the hen is not so brightly coloured. This species, which is about the size of a common pigeon, does well in an outdoor aviary so long as it has adequate shelter from the winter cold. The nest, composed of a few small twigs or bents, is built at no great distance from the ground, and there are generally two pairs of young reared in a season. All the Bronzewings feed chiefly or entirely upon the ground, upon various small seeds. In captivity they eat canary, millet, wheat, and dari, and I have seen a Common Bronzewing devouring with gusto a large earthworm, which shows that a certain amount of animal food is sometimes taken.

The Brush Bronzewing (*Phaps elegans*) is somewhat smaller than the last-named, and less widely distributed in the wild state, being more or less confined to the southern parts of Australia and Tasmania. I had the good fortune to meet with both species in Australia, often



recognizing their notes when the birds themselves were not visible. The smaller species has a good deal of chestnut in its coloration, and the sexes of the adult birds are easily distinguishable by the hen being the duller of the two. It is a delightful aviary bird, tame and gentle in disposition. The first I had, now many years ago, were received during the winter months, but went to nest at once in a moderately warmed aviary, building the usual frail type of pigeon's nest on some brushwood about five feet from the ground. The first pair of young were somewhat weakly, a common fault with winter-reared birds, but later broods in the spring and summer were quite a success. As is common to the pigeon tribe, the cock bird did most of the sitting and brooding during the daytime, the hen taking over at night.

The Crested Bronzewing, Crested Dove, or Crested Pigeon (*Ocyphaps lophotes*), is another very attractive species of elegant shape and form, its beauty enhanced by its upstanding crest and rather long tail. It is slightly smaller than those already mentioned, mostly grey in colour, with the usual iridescent colours on the wings and blackish bars on the smaller wing-coverts. I found Crested Doves very attractive aviary birds, breeding freely and producing two or three couples of young in the year. Their only drawback is that the sexes are so very much alike that it is not easy to be sure of a true pair, though the cock is perhaps slightly the larger.

All of the Bronzewings have a very rapid flight, but I think the Crested would beat any of the others in a speed contest, and the flight is accompanied by a distinctive whistling sound. As the bird perches on a branch it bows its body forward and throws up its tail in a very engaging gesture.

Before the first world war Crested Doves were kept at liberty by the Duke of Bedford, at Woburn Park, where they thrived and multiplied, but I fear they entirely died out during the war, no doubt owing to the attention of hawks and owls in the absence of keepers. We once tried to establish them at liberty in the London Zoo, several members of the Avicultural Society forming a committee to raise funds for their purchase. The Duke of Bedford, grandfather of the present Duke, took a great interest in the scheme, and presented us with ten pairs, and we were able to collect in all about twice that number, as well as a few of other species of doves. They were for the time being kept in the pheasantry near the present Bird House; the first lot liberated on the 1st May, 1907, and the remainder a week or so later. They remained very happily in the Gardens, where they were regularly fed, becoming very tame and greatly admired, and the first summer many of them nested in the trees, some taking up their abode in the Botanical Gardens. I spent the winter in Australia, and on my return the following summer found the number of Doves had been sadly reduced. The opinion of the keepers was that they





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PARTRIDGE BRONZEWING OR SQUATTER PIGEON (*Geophaps scripta*).



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SMITH'S PARTRIDGE BRONZEWING (*Geophaps smithii*).

To face p. 112]





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CRESTED PIGEON (*Ocyphaps lophotes*).



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WHITE-BELLIED PLUMED GROUND DOVE (*Lophophaps leucogaster*).

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had fallen victims to Tawny Owls which were, and are still, numerous in the London Parks, and readily pick off birds such as doves when most of the trees are devoid of leaves. Mr. Ezra had similar trouble when he attempted to establish Indian Turtle Doves at liberty in Surrey.

There are certain species of Bronzewings that are entirely terrestrial, rarely if ever perching on trees. Of these I have kept three, the two so-called Partridge Bronzewings and the Plumed Ground Dove. They inhabit the drier parts of the country which the Australians call Spinifex country, where the dry ground is interspersed with clumps of spinifex grass and rocks. The nests, formed of a few sticks or bents, is placed on the ground and the young, covered at first with brownish down, are said to mature very quickly and to be able to run at an early age. The Partridge Bronzewing or Squatter Pigeon (*Geophaps scripta*) occurs on the plains and in open timbered country in Queensland, New South Wales, and the drier parts of South Australia, and is said to behave rather like a Quail when approached by running and "squatting" instead of flying off like most pigeons. It is a plump bird, valued in Australia as a table delicacy, but a handsome addition to any aviary, being clothed in brown and grey with contrasting white and black markings on the head and throat, the naked skin surrounding the eyes is blue, and the wing-coverts and secondaries shining greenish-purple. In my aviary I had three of these birds, but was never able to determine their sex, and they showed no sign of breeding.

Smith's Partridge Bronzewing (*Geophaps smithii*) comes from the hot northern parts of Australia, but is very similar to the last in its habits. Its plumage is mostly brown above, reddish on the chest, and white on the flanks and underparts. The wings are ornamented with rich greenish-purple and the large patch of naked skin surrounding the eyes is red. I possessed three or four of these uncommon pigeons at one time, but found them uninteresting as they squatted together on the ground and were all exactly alike, giving no indication as to their sex, and they did not attempt to breed.

Another species that I always hoped, but was unable, to obtain was the Harlequin Bronzewing or Flock Pigeon (*Histriophaps histrionica*), which is one of the most brilliantly coloured of the Bronzewings, and at one time was to be met with in immense flocks in the hotter parts of Northern and Central Australia. Its habits are somewhat akin to those of Sandgrouse, but from all accounts, since the introduction of sheep-farming, the species has become scarce. I have never seen a living example, but perhaps some of our Australian members may have kept it, and be able to let us know about it as an aviary bird.

The smallest and, I think, most desirable of these ground-frequenting Bronzewings, is the Plumed Dove, *Lophophaps*, of which there are two



or three races. Probably the only one that has been imported is *L. leucogaster*, the White-bellied Plumed Ground Dove, a bird of the hot desert country of Northern and Central Australia. Plump and quail-like in shape, its head carries an upstanding crest, its eyes are surrounded by a large patch of bare red skin, bounded above and below by a line of black. The prevailing colour of the plumage is reddish sand-colour, relieved by bars of black and grey, a pure white abdomen and band across the chest, while the wings are decorated with iridescent purple-bronze.

This is a lovely little dove, a pair of which I regarded as one of the greatest prizes in my aviary. They were very tame and the cock would bow and coo to the hen close to my feet. She made a nest of a few pieces of dry grass beneath a tuft of grass, and laid two white eggs, but declined to sit properly. The English climate is, no doubt, too damp for these birds, which delight in the hot sun and desert-like conditions of their native land ; but no birds were more charming while they lived with me.

\* \* \*

## DISPOSITIONS OF MANDARIN AND CAROLINA DUCKS OF INTEREST TO BIRD- LOVERS RATHER THAN TO BIRD-SCIENTISTS

By EVELYN WICKS (St. Leonards-on-Sea, Sussex, England)

Some fifteen years ago I bought a pair each of Mandarins and Carolinas. These adult birds were never friendly, and always remained shy and extremely nervous and eventually escaped.

Two years ago I decided to start from scratch, and after great difficulty procured some eggs, which duly hatched out. I opened the incubator to remove the ducklings, and had my first surprise. The Carolina ducklings jumped fully 3 feet, and continued jumping these long distances, until I managed to gather them up. The Mandarins stayed quite quietly in the drawer. I placed the ducklings in quite a small container, heated with a Putnam lamp, and also gave them a small wire run, water to drink, grit, and food. After twenty-four hours, I placed a shallow container about 2 inches deep and 15 inches diameter, for them to bath in, and they loved it, but quickly returned to the warmth of the heater, between baths. I had to increase the size of the water bath frequently as the birds grew. They had long, very fluffy tails, and I was interested to note that as the tails grew into quills the fluff remained at the tip of the quills until they were fully grown, and then dropped off.



Always the Mandarins were friendly and extremely curious of everything going on, but the Carolinas remained timid. As the birds grew, I needed more space and made a small cement pond about 6 feet by 3 feet, very shallow at one end for easy exit. I placed 2-foot wire netting around a space some 42 feet long by 14 feet wide (but they could well do with less space). All went well until one day a cat sat outside the wire watching them, and they became frantic, dashing against the opposite side, endeavouring to escape, and causing their beaks to bleed. I now decided to cover in the pen completely with 6-foot half-inch wire netting at the side, and also a two-inch netting overhead. The *extreme intelligence* of these little birds was immediately apparent. The next time the cat appeared they ignored her. This, I think, is truly amazing, and it does seem incredible that they could realize their secure position, when the security was only man-made.

I had a small shelter in the pen, and shut the ducks in at night. However, as soon as they grew their flights and could fly, they refused to be shut up any longer. Whenever I sat in the pen watching them, they would nibble at my shoelaces and were quite friendly.

The next stage was when the drakes assumed their glorious winter plumage. The Mandarins were intensely proud; so much so that they now jumped on to my lap and it was a delight to have three Mandarins puffing out their chests in such pride and vanity, at such close quarters and to be able to examine them so minutely. Sometimes two would fly on my shoulders and proceed to battle across my face. In their battles they never hurt each other, and the only way they seem to be able to do any real harm is on the water. I once rescued the Carolina drake from being drowned by three Mandarin drakes, but that's another story in itself, which I will later tell at length.

One little Carolina duck has been most friendly, perhaps because of my persistence. I did love her so, and always picked her up from the day she was hatched. She got more or less used to it; at least to the extent that if she decided I might fondle her, she perched in a particular place on an old tree stump, and called out with a special note, which she keeps only for me. It's loud and full. I could then pick her up, and she would run her beak through my hair most affectionately. I could not pick her up from any other place.

As soon as the birds were in full plumage they paired off. Two Mandarin drakes chose two Mandarin ducks (or was it *vice versa*?), and the third Mandarin drake (whom I will call "No. 3") decided he wanted the Carolina duck, and then the fun, or should I say trouble, started. The Carolina drake wanted his legitimate mate, and so the three birds were always together, the two drakes always bickering. The odd Mandarin duck was quite prepared to mate with the Carolina drake, but he just did not want her. The two correctly paired Mandarin drakes were on the side of law and order, and



refused to allow the oddly matched pair to get on to the water, although they did manage to get the pond to themselves when the rest of the birds were out preening, and mating took place.

This state of affairs persisted for nearly two months, when the Carolina drake at last decided to put up with second best and mate with the Mandarin duck. Now fresh trouble occurred. The two respectable Mandarin drakes were as much opposed to this odd match as to the other one. They turned against the Carolina drake (with whom they had always been most friendly) and decided to drown him, "No. 3" helping. When I rescued him, he was quite exhausted, and I held him for about ten minutes before he recovered.

It was at this period that I discovered something most interesting, and something I had not noticed before, although I have been a life-long bird lover. The Carolina drake was now nervous of getting on the water and, in fact, the three Mandarins would not allow him on. I therefore stood at the water's edge, kept the Mandarins off, and allowed the Carolina to get his fair share. My discovery was, that if you looked directly at the bird you were talking to, he knew, and also all the other birds knew. This led to a new joy in my birds. "No. 3" is a great pet, and will nearly always fly to my shoulder when I enter the pen, and if I put my hand up, will step daintily on to it. Sometimes, if he felt like it, he would ignore me, and then I would look directly at his rival, the Carolina drake, talking affectionately to him. Immediately "No. 3" would fly to my shoulder, pecking at me in great fury, and puffing out his chest in great indignation, whereupon I could not help laughing, and this only added to his fury.

Mandarins are not fertile in their first year, and the ducks usually lay only one infertile egg. The Carolina duck laid three clutches of eggs (thirty in all). These were all infertile owing to the immaturity of the Mandarin drake ("No. 3") who mated her. When the duck was on the nest, "No. 3" would rush the length of the pen, attacking me with great fury.

The last stage is the only one that is not agreeable. The drakes started to lose their fine feathers, and looked ragged and miserable. They were no longer friendly, but moped as all moulting birds do. However, this did not last long, and soon the new feathers arrived, which are much the same colour as those of the ducks; but quite quickly one can see the colour starting to come back, and the day the first Mandarin flew to my shoulder once again, was another red letter day.

Once again the "Eternal Triangle" has appeared, and I am now waiting to see which drake wins the affections of the Carolina duck this year. I don't think she minds much either way, if only the drakes could settle their dispute. If she is too nice to the Carolina



drake, "No. 3" attacks her with great gusto, swinging her round with one of her wings and making her squawk for mercy.

The little Mandarin duck is still tagging along after the Carolina drake, and really loves him with Mandarin constancy.

\* \* \*

## PSITTACINES THE WORLD OVER

By ALAN LENDON (Adelaide, S. Australia)

In the course of a trip around the world, extending from August to December, 1953, I was privileged to see many collections, both public and private, and I felt that a record of the various parrot-like birds that I saw would not only be of interest, but might assist members in the mating up of rarities. My records of Australian species, especially the more common ones, are relatively sketchy, as they naturally did not impress themselves on my mind as much as unfamiliar ones did.

Keas (*Nestor notabilis*) were seen in several collections, but I was disappointed not to see a Kaka (*N. meridionalis*) anywhere, as it is a bird that I have never seen in life.

I saw many Lories that were new to me, some of them most attractive. The strange Black Lory (*Chalcopsitta ater*) was on exhibition at both Regent's Park and Wassenaar, whilst of the genus *Eos*, both the Ceram (*E. semilarvata*) and Wallace's (*E. squamata*) were in the Rotterdam Zoo, the Violet-necked (*E. variegata*) and the Red (*E. bornea*) were at Wassenaar, whilst David West, jr., and Rayson Brown also had the last-named in Los Angeles. Rayson Brown also had several of the very unusual-looking White-rumped Lories (*E. fuscata*), and West, jr. also had the Black-winged (*E. cyanogenia*).

Of the genus *Domicella*, the Black-capped (*D. lory*) was at Rotterdam the Purple-capped (*D. domicella*), the Chattering (*D. garrula*), and the Yellow-backed (*D. flavo-palliatus*) at Wassenaar, and R. C. J. Sawyer also had a nice pair of the last-named.

Turning to the Lorikeets, the two common Australian species, the Rainbow (*Trichoglossus moluccanus*) and the Red-collared (*T. rubritorquis*) were at Wassenaar, as well as at many other places. Other members of the same genus noticed were the Blue-faced (*T. haematodus*), Forsten's (*T. forsteni*), and the Ornate (*T. ornatus*), all at Wassenaar, and the last-mentioned was seen by me for the first time in a Singapore dealer's possession. Karl Plath had the delightful little Goldie's Lorikeet (*Glossopsitta goldiei*) breeding at the Brookfield Zoo, Chicago, and the Scaly-breasted (*Eutelipsitta chlorolepidota*) was noted at Wassenaar and elsewhere.

The only long-tailed Lories seen were both colour phases of Stella's



(*Charmosyna stellae*) in Taronga Park Zoo, Sydney, and Sir Edward Hallstrom had several Musschenbroek's (*Neopsittacus musschenbroekii*) and a single Alpine Lorikeet (*N. pullicauda*). Rayson Brown had several remarkable looking birds which I judged to be hybrids between the Violet-necked (*E. variegata*) and the Rainbow (*T. moluccanus*).

The only Fig Parrots seen were at Sir Edward Hallstrom's, where there were a large number of the Double-eyed (*Opopsitta diophthalma*), and a few Edwards' (*O. edwardsii*).

Of the Macaws, the Hyacinthine (*Arodorhynchus hyacinthinus*) was fairly common, Edinburgh Zoo having four particularly fine specimens. The only Glaucous (*A. glaucus*) that I saw were three in the Antwerp Zoo and one at Wassenaar, while R. C. J. Sawyer's Lear's (*A. leari*) was the only one seen in Europe, although three were exhibited in the Brookfield Zoo. Spix's Macaw (*Cyanopsitta spixii*) was represented by a very elderly bird at Regent's Park, a lovely specimen in the Antwerp Zoo, and two shockingly plucked birds in the Boston Zoo. Blue and Yellow Macaws (*Ara ararauna*) were common, and Rayson Brown had a breeding pair; Scarlets (*A. macao*) and Maroons (*A. chloroptera*) were also well distributed, Rayson Brown also having a breeding pair of the latter. The Military (*A. militaris*) was also fairly plentiful, and I saw the Severe (*A. severa*) for the first time on the Continent, it being represented in the collections at Antwerp, Rotterdam, and Wassenaar. Illiger's (*A. maracana*) was at Wassenaar, and the bird at Antwerp that I took to be this species, was said not to be so, and was presumably therefore Coulon's (*A. couloni*). E. N. T. Vane's Noble Macaws (*Diopsitta nobilis*) were a new species to me, and their progeny were to be seen in several other English collections.

The Conures were, in many instances, new to me, and provided many headaches in regard to identification. The Red-masked (*Ara-tinga rubrolarvata*) was only seen at Regent's Park, and big green ones with red flecks were called Gundlach's in Antwerp, Green-shouldered at Wassenaar, and Mona Island by Rayson Brown and if, as I think, they were all the same species, they were probably Mauge's (*A. maugei*). A similarly marked, smaller bird was also labelled Green-shouldered by Wassenaar (whose identifications were frequently faulty), and I regarded it as the Cuban (*A. euops*). A. A. Prestwich and Wassenaar both had the Cactus (*A. cactorum*). The Blue-crowned (*Thectocercus haemorrhous*) were in Regent's Park and Antwerp Zoos, and in Sir Edward Hallstrom's collection, and Rayson Brown was breeding them under the impression that they were Noble Macaws.

Queen of Bavaria's Conures (*Eupsittula guarouba*) were commoner than I had expected, Mrs. Clark of Bromsgrove having bred several, I think. The attractive Yellow-headed (*E. jendaya*) was very plentiful in England, was also at Wassenaar and Antwerp, and was being bred by Rayson Brown in Los Angeles, and the even nicer Golden-headed



(*E. auricapillus*) of which I am unable to discover an adequate coloured plate, was represented by four specimens in Antwerp and two more at Wassenaar.

The true St. Thomas (*E. pertinax*) was represented by a single bird at Brookfield, and Karl Plath believes it to be very rare, whilst the birds thought at that time by Regent's Park and A. A. Prestwich to be the St. Thomas were, I feel sure, the Yellow-cheeked (*E. chrysophrys*). The Brown-throated (*E. aeruginosus*) was in the Wassenaar collection and at the San Diego Zoo, and I think Mrs. Clark may have had them also; Rayson Brown had Petz's (*E. canicularis*) and was breeding the Golden-crowned (*E. aureus*); there was a solitary Aztec (*E. astec*) in the Bronx Zoo, New York, and A. A. Prestwich had the only Weddell's (*E. weddellii*) that I saw anywhere.

San Diego Zoo had a single specimen of the attractive, macaw-sized, Thick-billed Parrot (*Rhynchopsitta pachyrhyncha*). Black-headed Conures were not very uncommon, being at Regent's Park and Rotterdam, and in Rayson Brown's collection, whilst the Patagonian Conures which I saw at Whipsnade, Alfred Ezra's, and Wassenaar (where they were labelled Rock Parrakeet—*Neophema petrophila*!) were, I think, the Lesser (*Cyanoliseus patagonus*) as opposed to the Greater (*C. byroni*), of which Sir Edward Hallstrom had two. Sir Edward also had a single Slight-billed Parrot (*Enicognathus leptorhynchus*), and several Chilean Conures (*Microsittace ferruginea*), neither of which I saw elsewhere.

Of the attractive genus *Pyrrhura*, there were three of the very lovely Red-eared (*P. cruentata*) at Wassenaar, where there was also a single specimen of the delightful little Crimson-bellied (*P. rhodogastra*). Both A. A. Prestwich and Sir Edward Hallstrom were breeding the Red-bellied (*P. vittata*), which E. N. T. Vane also had. The White-eared (*P. leucotis*) Vane also had, as did Antwerp and Wassenaar, and it was being bred by Rayson Brown. Wassenaar also exhibited what they called the Brown-eared, which I think was Lucian's (*P. lucianii*).

Quaker Parrots (*Myiopsitta monacha*) were not uncommon, and Wassenaar had one and J. Bruyneel of Regie, near Brussels, two of an attractive blue mutation. Lineolated Parrakeets (*Bolborhynchus lineolatus*) were at Wassenaar, were later bred by A. A. Prestwich, and were also being bred by Rayson Brown.

Parrotlets I found difficult to identify, there being birds of this genus in the Boston Zoo and at Wassenaar. Spengel's (*Forpus spengeli*) was represented at Brookfield Zoo. The genus *Brotogerys* was almost entirely new to me. A. A. Prestwich had both the Yellow-winged (*B. chiriri*) and the Golden-winged (*B. chrysopterus*), and the latter was also at Wassenaar. The Tovi (*B. jugularis*) was at San Diego and in Rayson Brown's collection.

Most Zoos and many private collections had Amazons with many



of which I was unfamiliar and of some of the identifications of which I felt suspicious. There was a lovely pair of Vinaceous (*Amazona vinacea*) in Boston, and another in the Bronx ; the large Guatemalan (*A. guatemalae*) was at San Diego and the Mealy (*A. farinosa*) was seen at Bellevue, Rotterdam, Antwerp, and San Diego. The Orange-winged (*A. amazonica*) was at Regent's Park and Clifton ; the Blue-fronted was plentiful and included the Duke of Bedford's aged and nearly blind lutino ; the Yellow-shouldered (*A. ochroptera*) was at Clifton ; the Yellow-headed (*A. ochrocephala*) at Regent's Park and Keston and the Yellow-naped (*A. auropalliata*) also at Regent's Park. Levaillant's (*A. levaillantii*) was noted at Boston and Regent's Park, the rare Dufresne's (*A. dufresniana*) only at Clifton, and the variously designated Red-crowned, Red-fronted, or Red-topped (*A. rhodocorytha*) was at Regent's Park, Antwerp, Wassenaar, Edinburgh, and Rayson Brown's. Green-cheeked (*A. viridigena*) were seen at Bellevue and Brookfield ; Finsch's (*A. finschi*) in San Diego ; Yellow-cheeked (*A. autumnalis*) at E. N. T. Vane's and Regent's Park, where there was also the closely related Salvin's (*A. salvini*). Festives (*A. festiva*) were at Regent's Park, Clifton, and Antwerp ; two pairs of the very attractive White-browed (*A. albifrons*) were in Rayson Brown's collection, and the rare Salle's (*A. ventralis*) was at Regent's Park. Sir Edward Hallstrom had Cubans (*A. leucocephala*), as also did Keston and Boston, and Regent's Park had both the Red-throated (*A. collaria*) and the Active (*A. agilis*), and Rayson Brown also had the latter.

I found the genus *Pionus* an attractive one. Sir Edward Hallstrom had a Red-vented (*P. menstruus*), and this species was also in the Clifton, Antwerp, and San Diego Zoos. The nice Little Dusky or Violet (*P. fuscus*) was at Regent's Park and Clifton, and A. A. Prestwich and Antwerp had Maximilian's (*P. maximiliani*). The closely allied Hawk-headed Parrot (*Deroptyus accipitrinus*) was at Regent's Park, Edinburgh, Antwerp, Wassenaar, and R. C. J. Sawyer's. A single rather decrepit Red-capped (*Pionopsitta pileata*) was in the Antwerp Zoo, and A. A. Prestwich had White-bellied Caiques (*Pionites leucogaster*).

Dealing next with the African parrots of the genus *Poicephalus*, J. Bruyneel had Jardine's (*P. gulielmi*), and A. A. Prestwich had the Brown-headed (*P. fuscicapillus*). Senegals (*P. senegalus*) and the closely-allied Orange-bellied (*P. versteri*) were also in A. A. Prestwich's collection and at Regent's Park. The only Meyer's (*P. meyeri*) noticed were at Sir Edward Hallstrom's, and A. A. Prestwich's collection.

Grey Parrots (*Psittacus erithacus*) were numerous everywhere, and I was delighted to see specimens of the Timneh (*P. timneh*) at Antwerp, Regent's Park, and in Wilfred Frost's possession. The only *Coracopsis* that I saw was an example of the Lesser Vasa (*C. nigra*) at Sir Edward Hallstrom's. Examples of the extraordinary Pesquet's Parrot



(*Psittrichas pesqueti*) were to be seen at Taronga Park and at Wassenaar. A fair number of Red-sided Eclectus (*E. pectoralis*) and a few Grand (*E. roratus*) were seen.

The genus *Psittacula* was widely spread. Alexandrine Parrakeets (*P. nipalensis*) were not very numerous, the almost pure-bred yellow at Keston was very striking. Ring-necked Parrakeets (*P. torquata*) were ubiquitous and yellows were well distributed, whilst the only blues were those of the Duke of Bedford and David West, jr. The only African Ringneck (*P. krameri*) that I saw was a cock at Regent's Park. Blossom-heads (*P. cyanocephala*) must have been imported into England in large numbers during the brief lifting of the parrot ban, as they were in most English collections, and both the Duke of Bedford and Keston had yellow cocks; Rayson Brown had the only Plum-heads (*P. rosa*) that I saw. The only Layard's (*P. calthropae*) were a few immatures at Keston, and the Duke of Bedford had a solitary hen Malabar (*P. peristerodes*). I saw only two Derbyans (*P. derbyana*), both cocks, in England; they were at Regent's Park and at Mrs. Clark's; however, Rayson Brown had five in Los Angeles, and they were breeding. I saw E. N. T. Vane's Moustache Parrakeets (*P. fasciata*) with their recently fledged young one, and there were a few at Wassenaar; the only Javan (*P. alexandri*) was at Regent's Park. It was quite a thrill to see my first Long-tailed Parrakeet (*P. longicauda*) at the Bellevue Zoo, Manchester.

Barraband's Parrakeet (*Polytelis swainsonii*) was plentiful in U.K., but few were seen in U.S.A.; Rock Peblers (*P. anthopeplus*) did not seem numerous anywhere, whilst Queen Alexandra's (*P. alexandrae*) were widely represented. I did not notice many Australian Kings (*Aprosmictus cyanopygius*), but Alfred Ezra had several New Guinea Kings (*A. chloropterus*), and Regent's Park had a pair. Australian Crimson-wings were widespread, but I only saw three, all cocks, of the Timor species (*A. jonquillaceus*), two at Regent's Park, and one at Manchester.

As regards Lovebirds, A. A. Prestwich had a large number of Red-faced (*Agapornis pullaria*) and six Abyssinian (*A. taranta*), and Rotterdam had at least forty of the latter species. I did not keep particular note of the five formerly free-breeding species, but I formed the opinion that at least two of them were now quite uncommon, and I did not see a Madagascar (*A. cana*) anywhere. The blue mutation of the Masked (*A. personata*) was fairly plentiful in U.K., and numerous in U.S.A.; I saw only a few yellow Nyasas (*A. lilianae*) and David West, senior, had a blue Fischer's (*A. fischeri*). Hanging Parrots (*Coryllis*) I found impossible to identify; there was one at Wassenaar and two at Chessington.

Of the Rosellas, the Crimson (*Platycercus elegans*) was plentiful, and A. A. Prestwich had a pair with newly-fledged young in semi-mature



(red) plumage. Only a few Adelaides (*P. adalaidae*) were seen, and the only Yellows (*P. flaveolus*) were at Wassenaar, and those of D. West, jr. Green Rosellas (*P. caledonicus*) were seen only at Regent's Park and at Wassenaar. Pale-headed (*P. adscitus*) were common both in Europe and in America, as were Eastern (*P. eximius*) and Golden-mantled (*P. splendidus*). I saw a few Northern Rosellas (*P. venustus*) both in Europe and in the States, whilst Western (*P. icterotis*) seemed very plentiful in England, and relatively rare in U.S.A.

The Pileated Parrakeet (*Purpureicephalus spurius*) was surprisingly common in England and rare in America. Of the Ringnecks (*Barnardius*), the Mallee (*B. barnardi*) was more plentiful in U.S.A. than in Europe, and the only Cloncurry Ringnecks (*B. macgillivrayi*) seen were at Sir Edward Hallstrom's. Twenty-eights (*B. semitorquatus*) were only seen at Wassenaar and San Diego and Port Lincolns, (*B. zonarius*) were also quite scarce; I thought one bird in the Parrot House at Regent's Park was probably the north-western form of the latter (*B. occidentalis*).

As regards Blue-bonnets, I noticed the Yellow-vented (*Psephotus xanthorrhous*) at E. N. T. Vane's, J. Bruyneel's, and at several places in U.S.A., while the only Red-vented (*Ps. haematorrhous*) was at San Diego, and the Duke of Bedford had two hens of the rare Little (*Ps. narethae*). Extremely few Hoodeds (*Ps. dissimilis*) were seen, I remember noticing a cock at Wassenaar, but both Many-colours (*Ps. varius*) and Red-rumps (*Ps. haematonotus*) were common, especially in Europe. I did not see as many yellow Red-rumps as I had anticipated.

Turning now to the Grass Parrakeets, Bourkes (*Neophema bourkii*) were common everywhere, as also were Elegants (*N. elegans*). The only pair of Blue-winged (*N. chrysostoma*) that I saw were in Mrs. Clark's collection at Bromsgrove, and there was a solitary Rock (*N. petrophila*) at Wassenaar. Turquoisines (*N. pulchella*) surprised me by their abundance, and were breeding at Wassenaar, and Splendids (*N. splendida*) were fairly numerous in U.S.A. and increasing in U.K.

A solitary Swift Parrot (*Lathamus discolor*) was seen at Wassenaar, and Budgerigars (*Melopsittacus undulatus*) were ubiquitous, with their mutations becoming progressively less attractive, at any rate to my untrained eyes!

As a result of my tour, I have now seen all but one of the recognized species of Cockatoos in life. Palm Cockatoos (*Microglossus aterrimus*) were at Taronga Park, Regent's Park, San Diego, and in the possession of David West, senior, in Los Angeles. Red-tailed Blacks (*Calyptorhynchus banksii*) were at Wassenaar, Regent's Park, and San Diego, as well as at Sir Edward Hallstrom's in large numbers and in this collection also were seven examples of the rare Glossy Black (*C. lathamii*). Sir Edward also had numerous White-tailed Black (*C. baudinii*) and



Yellow-tailed Black (*C. funereus*) and the latter were also at Regent's Park and Wassenaar. Gang-Gangs (*Callocephalon fimbriatum*) were breeding at the Duke of Bedford's, and were also at Mrs. Clark's and J. Bruyneel's.

The Greater Sulphur-crested (*Kakatoe galerita*) was everywhere, and the Triton (*K. triton*) was in Taronga Park and Regent's Park and, I think, at Rotterdam, although these seemed rather small. Citron-crested (*K. citrino-cristata*) were at Keston, Wassenaar, and Regent's Park, Lesser Sulphur-crested (*K. sulphurea*) at Keston, Regent's Park, Clifton, and the Bronx, and Dwarf Sulphur-crested (*K. parvula*) at Regent's Park and Dudley. Leadbeater's (*K. leadbeateri*) were in most collections, White-crested (*K. alba*) at Regent's Park, and J. Bruyneel's, Salmon-crested (*K. moluccensis*) at Regent's Park, Wassenaar, R. C. J. Sawyer's, and J. Bruyneel's, and the Blue-eyed (*K. ophthalmica*) was represented at Regent's Park and was breeding at Sir Edward Hallstrom's.

The Bare-eyed (*K. sanguinea*) was not uncommon, Rayson Brown having a breeding pair; Ducorps' (*K. ducorpsii*) was at Taronga Park and at Whipsnade, and I saw Goffin's (*K. goffini*), new to me, at Whipsnade, Dudley, Wassenaar, and the Bronx. I had expected to see the Red-vented (*K. haematuropygia*) in U.S.A., but did not meet it anywhere, though Wassenaar's Goffin's was labelled thus. The Slender-billed Cockatoo (*K. tenuirostris*) was at Regent's Park and at San Diego, and the Western Slender-billed (*K. pastinator*) was also at Regent's Park, though here the two labels were reversed. Galahs (*K. roseicapilla*) were numerous, as also were Cockatiels (*Leptolophus hollandicus*), but I missed the white mutation of the latter in California.

\* \* \*

## MIXING THE LARGER BIRDS

By D. H. S. RISDON (Dudley, Worcs., England)

Many people, when they start keeping birds, have visions of huge aviaries containing mixed collections of species all flying happily together, to the great delight of their owner. This is a dream which can seldom be realized in practice, as most of the bigger kinds of birds are too pugnacious to agree together. One can, however, go quite a long way towards realizing this dream, first by sticking to males only or, secondly, mixing only those species which are so different from each other that there is no rivalry.

This is not an article for the systematic breeder of birds. There is no doubt whatever that where good breeding *results* are required, the best rule is one pair per aviary. I am thinking now in terms of birds of the size of Cardinals and upwards, most of which get very aggressive when in breeding condition.



I am a great lover of really large aviaries. In my opinion they are the only ones which are really an ornamental adjunct to a garden, especially if the framework is of larch poles with the bark left on, which to my mind blends so much more with the surroundings than sawn timber or metal.

With these ideas in mind, I built myself an aviary 50 feet long and 15 feet wide, with a larch pole framework, and as I intended to keep the larger kinds of birds I used one-inch mesh wire netting instead of the usual half-inch. I have discovered, in practice, that birds of the size of a House Sparrow and upwards cannot get through one-inch mesh. Moreover, once the bright galvanizing has toned down, the wire is hardly noticeable, and your view of the birds is almost uninterrupted. One-inch mesh will exclude rats but not, of course, mice, nor such marauders as weasels, but it has been my experience that it is almost impossible to keep mice out of very big aviaries anyway. The solution to that problem is to make your nest-boxes and feeding arrangements mouse-proof *inside* the enclosure. As the aviary was only intended for use during the summer months, the usual closed-in shelter was dispensed with. The whole structure is built against a brick wall, and along that side I have provided a 2 foot overhang of asbestos sheet, which gives ample shelter from wind and rain. The aviary is, of course, planted and turfed. A great advantage in constructing the framework of natural larch poles is that besides being ornamental they require no maintenance. They will stand for many years without any attention, and when they do rot can be easily and cheaply replaced. As a matter of interest to those who contemplate erecting such a structure, the total cost of this aviary, including materials and labour, was approximately £40, a price which, I think, compares very favourably with much smaller aviaries made of more expensive materials.

This aviary has given me a great deal of pleasure, as the space gives the birds plenty of room in which to fly about and disport themselves in a way they can never do in small enclosures. In other words, one has the opportunity of seeing what birds can do and studying their behaviour, besides just seeing what they look like. Personally, I would rather have a few pairs kept under these conditions than a larger collection housed in rows and rows of small, unattractive aviaries, but that, of course, is entirely a matter of personal inclination.

Last year I successfully kept the following species together from April until October: White-crested Jay-Thrushes, Long-tailed Glossy Starlings, Bleeding-heart Pigeons, Red-crested Cardinals, Virginian Cardinals, Pennant's Parrakeets, Ring-neck Parrakeets, and an odd Cockatiel.

At the beginning of the season I also included a pair of Blue Whistling Thrushes, but these had to be hastily removed when one was caught



trying to murder a Cardinal. I also tried a Blue-cheeked Barbet, but for some curious reason the Pennant's took a violent exception to this bird, chasing it to the ground and pouncing on it like a couple of hawks, so this had to be removed also.

I introduced the Pennant's and Ring-necks with some trepidation, knowing the aggressive nature of parrakeets towards each other, but they settled down very well and, apart from minor bickering, there was no serious trouble.

The Pennant's went to nest and reared two very fine youngsters. It is interesting to note that this same pair for the previous two breeding seasons, when they were housed in one of the Zoo aviaries in their own compartment, on both occasions hatched young, but let them die at about a week old. One thing was very noticeable. Whilst they were prospecting for a nesting site and during the time that the hen was preparing the nest, both birds were more aggressive than at any time throughout the rest of the season. Once the hen started to incubate the cock became extremely quiet, sitting up under one of the overhead shelters near his wife's nest-box. When the hen came off for exercise, both birds would fly from end to end of the aviary, and it was a beautiful sight to see this lovely parrakeet really get going on the wing.

The Ring-necks were very quiet to start with, but I think this was largely due to the fact that the cock was a young bird and had only just acquired his pink ring. Later on in the summer he began to throw his weight about a bit more, and so did the hen who, by the way, is a lutino. They both spent the early part of the summer moulting, and came into breeding condition in August, when the hen took to a nest-box. By this time the Pennant's had reared their family, and I thought would have had no further interest in breeding. There were four or five nest-boxes at different points in the aviary, and although things had been quiet enough throughout the summer, as soon as the hen Ring-neck decided to set up house the Pennant's seemed to think they had the prerogative of all the nest-boxes. Although they did not want one themselves, they took exception to the hen Ring-neck's right of entry. There was then a good deal of bickering between both pairs, but as it was too late in the season for serious breeding, I did not bother much, and there was no serious fighting.

I had rather expected that the parrakeets would do a lot of damage to the growing bushes and plants, but they did surprisingly little, possibly because in a large aviary they were able to take more exercise and had other things to occupy their minds. The parrakeets took absolutely no notice of the other birds, nor they of them.

I think one of the advantages of a mixed aviary is that all the birds get a greater variety of food which their owner would not normally think of giving them. For instance, the parrakeets often ate oranges



and bananas put in for the softbills, and I frequently saw them at the pot containing insectivorous mixture. We have a mixed aviary in the Birdhouse at Dudley Zoo, and I have actually seen a Virginian Cardinal eating chopped-up raw meat put in for a Sun Bittern, to give an example of the different and unlikely foods which birds will eat given the chance.

The White-crested Jay-Thrushes I have already written about in a previous article. They certainly provided the comic element in the aviary, both with their amusing antics and laughing calls.

The Cardinals were no trouble at all. Being the smallest birds in the aviary they could hardly be otherwise, but the bigger birds ignored them.

The Cockatiel is a tame pet who spends his summer in the aviary and the winter in a cage indoors. I gave him a mate to see if he wanted to breed, but he obviously did not recognize her as such, and much preferred human company when anyone was about. Oddly enough, he took to a nest-box and spent many hours therein, furiously guarding it against all comers including, even, the Pennant's who retreated somewhat nonplussed from his onslaughts if they came too near. I eventually removed the hen, as she looked somewhat disconsolate, poor thing! All she ever got from "Joey" was "Pop goes the Weasel", which is his favourite tune. "Joey" also used to infuriate the Ringnecks by playing "Peeping Tom" when they were courting, leaning over the edge of the roof of one of the shelters and watching them intently, while the cock was stamping the perch and feeding the hen.

The Long-tailed Glossy Starlings proved to be very harmless birds, and looked most lovely in the sunshine, flying the full length of the aviary with their long tails trailing behind them.

The Bleeding-heart Pigeons, of course, gave no trouble. In any case, it is generally recognized that birds of the dove and pigeon family are good mixers with other genera.

To those interested in trying a mixed collection of the larger birds on the above lines, I would say there are two rules to be observed. The first is to supply a really large aviary. I would not have attempted to mix, for instance, Jay-Thrushes with Cardinals in an aviary of less dimensions than this one. I think that provided there is sufficient space for the birds to get away from each other there is no cornering and bullying. The second rule is, of course, to mix species from entirely different genera. Most fighting occurs through rivalry, but there is no competition between birds whose habits and temperament and requirements in the way of nesting sites are different. If you have alternate indoor accommodation for use during the winter, there is a lot to be said for a summer aviary of this type. For one thing, you can bring your birds inside during the cold weather which makes it



pleasanter, from your own point of view, looking after them, and for another it gives the ground and plants in the aviary a chance to be rested throughout the winter months.

\* \* \*

## BREEDING OF THE RED-SIDED ECLECTUS (*LORIUS PECTORALIS*) IN NEW ZEALAND

By W. G. BAIRD (Palmerston North, New Zealand)

This is an account of my breeding of the Red-sided Eclectus. It is the first time it has been bred here, in fact my pair, apart from two cock birds in one of the Zoos, are the only Eclectus in New Zealand.

I procured a pair in January, 1954, whilst on a visit to Australia. They were both bred late in 1953, having been not long out of the nest when I got them. I arrived back in New Zealand in February, with the birds, and they soon settled down in their new quarters, but within a month I lost the hen. It died for no apparent reason, showing none of the usual signs of sickness. That put me in a fix. I could not get a replacement from overseas as our authorities had seen fit to reimpose the parrot ban in N.Z., and at the time of writing there does not seem to be any prospect of it being lifted.

Here I must digress slightly. I knew of a hen Eclectus which a lady in my city had as a pet—she bought the bird for £50 from a naval sailor during the war years. He could not tell her the name of the bird, and she had no way of finding out. It was only through my visiting her neighbour in 1948 and hearing the bird call out that I discovered it. It was quite tame and would say a couple of words; she had named it Bill, but when she found an egg in the bottom of its cage, she promptly changed its name to Whillemena. At that time I had never seen an Eclectus, so told the lady that I would see if I could find out what the species was, which I duly found in Caley's *What Bird is That?*. Well, when my bird died, I thought I would see if the lady would sell me her bird, which she did, and it enabled me to have a pair again. I put them together, but they did not take any notice of each other. The hen had been kept in a cage, with the consequence it was wing stiff. I then put in a nest-box, four feet high, with the inside lined with wire netting. The box has an extension of a foot on the bottom, making it L-shaped, the extension being hinged to facilitate inspection. I put a layer of decayed wood on the bottom and it was no time before the hen was in the box. Next thing there were two eggs in the box. She sat tight, and after she had been sitting for a couple of weeks I managed to get the eggs out for testing with a strong torch; they both proved clear, so my hopes were somewhat dashed. I removed the eggs and she immediately laid two more. This time one was fertile, which she hatched out, only to



let it die after three weeks, so my hopes were again dashed. She duly laid again, two more eggs, this time both were fertile, and the first chick hatched on 2nd February, followed by the second on 4th February, both eggs taking twenty-eight days to hatch. She sat tight on the chicks, only coming off for short periods to be fed by the cock. At this time she developed a very shrill call, and she used the same call all the time the chicks were in the nest. The cock bird made no attempt to go in the nest; he seemed to maintain a very indifferent attitude, as if to say: "well, I've done my part, the rest is up to you, old girl," but he was always ready to feed when she called him. I maintained a daily inspection and the hen did not object to my intrusion. Maybe it was on account of her being so tame through being a pet. The elder chick was in the box for 74 days before coming out, the second bird was 82 days, but they spent a few days looking out of the hole before deciding to come out into the world. The first chick was flying three days after coming out, the second came out on 25th April, and has not flown at the time of writing. Both chicks are cock birds, and nearly as large as their father.

The hen is now getting ready for another brood, as she is in the nest-box practically all the time. All I need to find out now to make the cycle complete, is whether the cock bird takes over the feeding of the young once they are out of the nest. To date I have not seen either parent feeding the young. The cock never went into the nest-box, but when I lifted the lid for inspection he was always close, and had a look in when I did. Neither parent objected to my regular visits to the nest. For feeding, I gave the birds a staple diet of sunflower seed, wheat, and plain canary seed, plus any suitable green food. Whilst feeding the young, in addition to the above, they were given peanuts, soaked raisins, banana, ripe pears, apples, silver beet, thistle, all kinds of seeding grasses, lettuce leaves, seeding dock, dock leaves, and the hen had a liking for the roots, and a weed known as "fat hen". I gave the birds as big a variety as I could procure, as I do not think that they would have reared the chicks without it.

The Eclectus always arouse interest in visitors to my aviaries on account of the contrasting colours of the sexes.

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*[Fox Photos*

MISS E. MAUD KNOBEL PRESENTING A BOUQUET TO THE DUCHESS OF  
BEDFORD.

*To face p. 128]*





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[Cage Birds

THE DUKE OF BEDFORD UNVEILING THE MEMORIAL PLAQUE.



## MEMORIAL TO THE TWELFTH DUKE OF BEDFORD

Early in 1954 it was decided, in response to numerous requests, to launch an appeal for funds for a Memorial to the late Duke of Bedford. A Committee was formed consisting of Mr. Alfred Ezra, President of the Avicultural Society, Miss E. Maud Knobel, Vice-President, Mr. E. J. Boosey and Mr. D. Seth-Smith, Vice-Presidents, and Messrs. B. H. Dulanty, S. Porter, A. A. Prestwich, J. J. Yealland, and R. C. J. Sawyer (Hon. Treasurer). Funds were asked for to provide an aviary for homing Budgerigars at semi-liberty in the Zoological Gardens at Regent's Park, London, and a Challenge Cup to be known as the "Duke of Bedford Memorial Trophy" for the best Parrot-like bird, to be competed for annually at the National Cage Bird Exhibition. The appeal met with a ready response from members of the Avicultural Society, and subscriptions were received from all over the world from people who wished to pay tribute to a very great aviculturist, and one who had done so much for the Society.

An aviary was duly erected in an open space near the Parrot House at the London Zoo, and before it was placed a plaque with the following inscription :—

Hastings William Sackville Russell  
12th Duke of Bedford  
1888-1953

Aviculturists all over the world have subscribed to present this aviary to the Zoological Gardens of London as a memorial to the 12th Duke of Bedford, a great naturalist and aviculturist.

On Monday, 18th April, the unveiling ceremony was performed by the present Duke of Bedford and was attended by the Duchess of Bedford, the Dowager Duchess of Bedford, Lord Hugh Russell and Lady Daphne Russell, Viscount Chaplin, Hon. Secretary of the Zoological Society, all members of the Appeal Committee except Mr. Ezra, Mr. Porter, and Mr. Prestwich, who were prevented by illness and bereavement from being present, and a large number of subscribers. All those attending met in the Fellows' Restaurant, where the Duchess of Bedford was presented with a bouquet by Miss Knobel, and the Dowager Duchess with a bouquet by Mrs. McGarry, sister of Mr. Sawyer, Hon. Treasurer of the Appeal Fund. The party then walked to the aviary, where Viscount Chaplin formally opened the proceedings, and was followed by Mr. Seth-Smith, who referred to the late Duke of Bedford's great contributions to aviculture, and in particular his success in establishing homing Budgerigars, and said how grateful they all were to his son for coming to unveil the memorial to his father, who they all held in such high regard.



The Duke of Bedford then replied : " Thank you for your kind welcome, and in particular thank you for the praise you have given to my father's contributions to aviculture. The unveiling of a memorial is, inevitably, a sad occasion, bringing back memories of someone to whom we all wish to pay tribute, but who is no longer with us. However, to-day, we not only have the fine plaque which I am about to unveil, but also the aviary, a happy living reminder of my father's work in the interests of bird-lovers. I am sure, were it possible for him to be with us, he would be deeply moved, as indeed I am, by your kindness and that of his friends and admirers from all over the world, who have so generously contributed to this memorial. It is the embodiment of one of his principal interests, and certainly one that brought him the greatest happiness in all his life . . .

" If one walked with him through his aviaries, and he got over his shyness, he would tell one things about birds and their individual characteristics, just as you and I might talk about our friends. I have never met anyone else who had that extraordinary insight into the minds of animals, fishes, or birds, or such a capacity for being able to transmit that knowledge to others. I imagine it was this deep feeling and understanding that made it possible for him to contribute so much for the benefit of bird-lovers. For example, we have here this original discovery that a bird need no longer regard its cage as a prison, but as its home. It was discoveries like this which made my father one of the most distinguished and best-loved aviculturists of his generation. That is why you have given so generously and why I, his son, have been invited to unveil this memorial plaque, and why I have such pleasure and pride in doing so."

The Duke then unveiled the plaque, and immediately afterwards a trap-door in the roof of the enclosure was opened to enable the Budgerigars to fly out at will.

The aviary was stocked with birds from the late Duke of Bedford's collection at Woburn, and from a number of Budgerigar enthusiasts who had followed the Duke's example and raised homing strains.

The " Duke of Bedford Memorial Trophy " is shown in an illustration to this article.

Great credit is due to Mr. R. C. J. Sawyer, Hon. Treasurer of the Duke of Bedford Memorial Appeal, not only for all the hard work he put into raising the necessary funds, but for his thought and care in the organization of the unveiling ceremony.

P. B-S.

\* \* \*





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THE DUKE OF BEDFORD, LORD HUGH RUSSELL, THE DOWAGER DUCHESS OF BEDFORD, THE DUCHESS OF BEDFORD,  
LADY DAPHNE RUSSELL, VISCOUNT CHAPLIN.

[Fox Photos

[To face p. 130





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THE DUKE OF BEDFORD MEMORIAL TROPHY.

*To face p. 131]*



## STUDIES ON GREAT CRESTED GREBES

By K. E. L. SIMMONS (Tilehurst, Reading, England)

Illustrated by Robert Gillmor

*(Continued from page 102)*

## 3. THREAT AND FIGHTING AND THEIR RELATION TO SEXUAL RIVALRY, TERRITORY, THE DEFENCE OF THE YOUNG, AND COURTSHIP

*There may be hostility between members of one pair and members of another . . . the only reason I can discover for it is the trespassing of one or both birds of a strange pair upon the territory of another. It is much more interesting, however, to find in these birds what we had best call flirtation . . . a bout of shaking ensues between two birds who are not mated. If the rightful mate sees what is going on, it is always roused to action. . . . It drives the odd bird away (often by a subaqueous attack with the beak) and then almost always has a strong bout of shaking with its mate.*

Huxley, 1914: 521 and 558.

Now that the more general side of the Great Crested Grebe's life-history has been briefly outlined in the preceding parts, the rest of the paper will be largely concerned with various intriguing and often spectacular aspects of its reproductive-cycle. Emphasis will lie mainly upon behaviour rather than the more numerical details of the breeding biology, though these will not be entirely neglected.

Writing as recently as 1943, David Lack was able to say, in his *The Life of the Robin*, that "the study of bird behaviour is at so early a stage that it can be described in simple language without loss in precision". Now, in 1955, the first part of this remark is fortunately no longer true. The objective study of bird behaviour has made rapid progress in this country, thanks mainly to the work of Dr. N. Tinbergen and his colleagues. Tinbergen's book on *The Herring Gull's World* shows clearly, however, that the last part of Dr. Lack's comment can be as true to-day as ever it was, in spite of the great increase in knowledge. The description and analysis of behaviour can still be made interesting and readable to a wide public without any real loss in scientific value. Unfortunately many writers in recent years, myself included, have tended to forget this. The increase in complexity of bird behaviour studies has driven the amateur observer away into other branches of ornithology to a very large extent. This is to be deplored for the non-professional worker considerably helped to lay the foundations of the modern objective approach in the pre-war years.

Questions of threat and fighting will be the subject of the present section. This has not been nearly so adequately dealt with in the literature as the courtship has, although an understanding of the



aggressive behaviour is essential for an appreciation of the nature and origin of the courtship itself.

Brief but valuable information is to be found in Huxley's great paper: he outlined the general territorial set-up in the species (at a time before this concept had fully penetrated ornithological thought to the extent it was to do subsequently) and also recorded, in more detail, that many quarrels between grebes had nothing to do with any territory but were due to sexual rivalry. Huxley's observations on the territorial side of aggressive behaviour were later extended by Venables and Lack, who concentrated mainly on the possible function of territory and did not discuss the many non-territorial aspects.

#### *Aggressive Behaviour and the Annual-cycle*

While some bird species, such as House-sparrows (*Passer domesticus*) and Great Tits (*Parus major*), will squabble over food in winter and others, such as the Robin (*Erithacus rubecula*), keep up a winter territory, aggressive behaviour is usually best developed when the birds are in a reproductive mood. The Great Crested Grebe belongs to this last class.

During the winter, between the usual October-end and late January-beginning of noticeable reproductive activity, some grebes may occasionally "bark" and threaten others in open water. This has nothing to do with disputes over food, and is unrelated to any territory. It seems to be due to some sort of weak reproductive tendency, for the grebe is one of those species in which such a tendency is never absolutely dormant. With the inception of the first stage of the reproductive cycle (see p. 13), hostilities develop more intensely. Quite a deal of threatening, some attacking and occasional fighting take place in the open water which is now the scene of very much activity, particularly of head-shaking courtship between mated birds and those in the process of pairing-up. This aggressiveness is due to sexual rivalry, as described by Huxley, in circumstances often much the same as those in the quotation cited at the head of this section. This kind of sexual fighting goes on throughout the cycle, both in the open water and in the area of the nest.

The clash of interests in the "free" ownerless water is nothing in comparison with what happens in the vicinity of cover, when the grebe pairs start to search round for nest sites. Now the birds may have two reasons to set an edge to their tempers—their aggressiveness may be both sexual and territorial at one and the same time. The situation is started in motion by a few (assumed) older and more experienced birds which visit their former territories of the previous season on fine days in winter itself, especially after December has had its run. These territories are defended with increasing intensity as the season progresses. Many pairs, however, go through



their period of initial courtship in the open water and only then start to look round for likely nest sites. Once they have settled down at a suitable spot this site becomes the focus point of their territory and they drive intruders away from it and also from the water surrounding it. The chances of finding unoccupied areas are reasonably good earlier in the season, or on lightly populated waters. But at places with high numbers, however, such as at Burghfield, or at those with a relatively poor amount of cover, this becomes increasingly difficult later. As some of the earlier established territories may have several nest sites in them, when the later wave of site-seeking grebes travels round a few persistent invaders may manage to annex sections of the over-large areas. However, things do not go well for those pairs trying to settle themselves when the local season is in full swing and all the best sites have been requisitioned. They are forced to continue wandering about, intruding now in one territory and now in another, entering cover if unobserved, only to be eventually driven away. Such birds may be forced to nest in unsuitable places or may even be prevented from breeding at all. Some at a later date manage to sneak unobtrusively into the edges of existing territories when the owners are busily incubating or looking after young, while others may be able to take over sites deserted after the occupants have ceased breeding.

Once established, the territories are maintained right through the pre-parental stages of the cycle (see p. 13), during incubation, and also during the time that the adults are tending the young—if the territory is not then deserted. But the period of most intense aggression occurs before the birds begin to incubate. When the young hatch out the parents defend them wherever they may be—in the territory or in the open water—for as long as they associate with them. Thus the Great Crested Grebe is aggressive for various reasons right through its whole reproductive-cycle, and it is convenient next to review these reasons in a little more detail.

#### *The Objects over which Grebes are Aggressive*

I hope that from the facts just given it is clear that what may be called the reproductive aggressiveness of the Great Crested Grebe is mainly concerned with (1) the mate, (2) the nest site, and (3) the young. Other grebes coming into the neighbourhood of these are likely to be threatened, attacked, and even fought with.

#### *The Mate*

Unless combined with territorial hostility (and it is often hard to be certain whether the birds are fighting for sexual or territorial reasons, or for both), aggressiveness over the mate only reaches a serious state if "flirtation" (as Huxley termed it) is involved for, usually, a paired grebe is content merely to threaten another coming



near the mate. This flirtation (or the displaying together of a male and female that are not paired) is otherwise a little recorded aspect of bird life. As the male Great Crested Grebe is the most likely of the two to show such behaviour, much of this sexual aggressiveness is between females—I have in fact no records myself of a mated female flirting and it is obvious from Huxley's observations that such a thing is rare. Sexual antagonism of this sort is most intense during the pre-parental stages of the cycle. While the male grebe is the more intense of the two in territorial aggression, when his mate is occasionally as persistent as he in threat and attack, even at times more so, then this is because her attentions are directed at the intruding female with which her mate is flirting. Once a paired female went almost berserk in the nesting territory. The male had approached an intruding female first in threat-display and then with an increasing tendency to head-shake, mixing his aggressive calls with the ticking courtship note. Previously, as is normally the case, his own female had stayed behind him in his dealings with the strange pair, but now she dashed at the other female and harried her back and forth across (and under) the territory. She even pecked at her mate in passing! Such recriminations against the "faithless" husband are rare though, as Huxley points out, and marital appeasement is usually effected through head-shaking. On another occasion a mated female was incubating when an intruding female came near. The male was not at all inclined to see the latter away and finally the first female jumped down from the nest and drove her off. Further examples of sexual antagonism—in open water—are given by Huxley.

### *The Nest Site*

The nesting territory of the Great Crested Grebe is built up round the nest site. Unlike many typically territorial species, grebes do not first set up a territory and then fix on a nest site later as the season progresses. Most territories are established when the grebe *pair* has "chosen" a site. This choosing involves entering likely cover, commencing to build there, and displaying, resting and preening in the immediate vicinity. The male grebe is the more aggressive of the sexes in territorial defence. In those older pairs that have kept in touch with their territories during the winter (see above), initial courtship, the visiting of cover, nest building, and the defence of territory all tend to develop together. Territories are never maintained in places where there are no nesting sites. This close link between territory and the nest site is well illustrated by a pair of grebes watched by Venables in 1936 at Frensham Little Pond (Surrey). These birds had chosen nest sites in two widely separated places, both of which they defended but not the intervening open water. At Burghfield, early in the season, individual pairs have had as many as



three nest sites simultaneously, each defending all these and maintaining one large continuous territory. While grebes are always rather inclined to be pugnacious, it is in the vicinity of the nest itself that the most intense aggression is liable to be seen. While invading males will never risk combat over a flirtation they will fight bitterly on occasions to win over a nest site.

Some remarks on the reason for all this trouble, that essential item the nesting-platform, seem appropriate at this point. This is something much more than a place for the eggs: without a platform (or a substitute one) the birds cannot copulate, for this must be done, after soliciting, on a *raised* site. In effect, aggression over sites could be considered as a rather specialized form of sexual fighting.

### *The Young*

Any strange grebe, however innocent its intentions, is liable to be threatened if it comes near the young of another pair, both inside and away from the territory. A typical example of a serious encounter resulting from the defence of the young is as follows. A pair of grebes leaves its nesting territory and wanders off with the brood to the open water to feed. By chance the birds trespass in the territory of another pair and are threatened. The other adult grebes then dive at the young, which do not appreciate the situation, whereupon the parents, instead of making off as they would usually (having no essential interests involved within the other territory), retaliate with threat, actual fighting perhaps then resulting. If, as occasionally happens, such a wandering family makes its temporary headquarters at a stretch of water away from the original nesting territory and the parents chase off intruders coming near the young, because of the birds' restricted mobility, an accidental territory of sorts appears. This should not be confused with a fixed territory centred on the nest, however, for it moves with the young.

### *The Type of Nesting Territory Maintained*

All breeding pairs of Great Crested Grebes exert ownership over a nest site at least, but the size of the defended water adjoining this, as well as the number of activities conducted there, varies considerably. Much depends on the density of the population and the degree of competition for sites (and hence on the amount of cover available). Another most important factor is the nature of topography: whether the littoral cover is irregular, with a small frontage of water (for example), affording each grebe pair a good view of its neighbours; or even, with a wide frontage of water, so that the birds are hidden from one another when at the nest.

The territorial situation at Burghfield may be briefly outlined, using



Mrs. M. M. Nice's classification of the main types of nesting territory as a convenient basis for discussion. These are:—

A. Mating, nesting, and feeding ground for the young; B. Mating and nesting ground, but not feeding ground; C. Mating station only, and D. Territory restricted to the narrow surroundings of the nest, as found in both colonial and solitary species.

As pointed out by Huxley, most pairs of Great Crested Grebes maintain a territory of Type B. Within this area (which may measure from 300 to 900 square yards at a very rough approximation), the two birds build their platform (or platforms), do some of their courtship, all their intimate sexual behaviour, and incubate the eggs. Only an unimportant amount of their food is captured there and they hunt most in open water away from cover. They may desert the territory when the young hatch out.

In addition, I have found that a few pairs have held a joint nesting and feeding territory of Type A. At Burghfield, there is a small, land-locked island-dotted pool of some 2 acres which has a narrow, bottle-neck entrance leading from the open water. This "breeding-pool", as we call it locally, is a very popular nesting spot for the grebes and in 1954 no less than nine pairs tried to breed there, though usually it holds five or six pairs at the most. As in all the other years from 1948 onwards, one pair established an early Type A territory of about  $\frac{3}{4}$  acre while all the remaining territories, occupied by stages later, were crowded into the other  $1\frac{1}{4}$  acres and their owners fed away from the pool. Some of them had to *dive under* their neighbour's areas to reach the open water. A small proportion of pairs (two in 1954) sneak into a densely populated place like this after the others have settled down, and are often very furtive except in the immediate vicinity of the nest. Thus, such suppressed (and compressed) birds really have a Type D territory of only a few square yards.

The normal Type B grebe territory can never provide enough food for the adults and the chicks so that the parent birds must of necessity leave it with their brood to hunt elsewhere. But often the territory is not deserted entirely when the young have hatched, as Venables found to be invariably the case at Frensham. The birds may keep in touch with it and rest and roost there. The less fortunate pairs with a Type D territory, on the other hand, probably invariably desert their nest site entirely when the young have come off, as my friend C. E. Douglas points out to me. The few pairs with the larger Type A territories remain in them for the whole season, though individual excursions are made by both male and female, sometimes with the young. Those grebes owning such territories locally seem the most likely to engage in genuine second-broods and often rear the most offspring in a season. Thus in 1954, the pair (A54 in my numbering) inhabiting the large, traditional nesting/feeding territory in the



breeding-pool reared two broods of two young each. Another isolated pair on a small pool near by (see p. 12) reared four stripe-heads as well, the two pairs between them (both in effect occupying Type A areas) raising twice as many young as all the remaining 16 pairs. None of the Type D birds had any surviving chicks at all in that year, which was not, however, a very good breeding year in general as it happened (L. McCartan confirms for the Oxford area). All this would suggest, perhaps, that the territorial set-up is still evolving, rather than declining, in the Great Crested Grebe. The advantage seems to be with the birds possessing the rare Type A territories. It may be remarked in passing that the Dabchick seems invariably to establish territories of this kind (Hartley, 1937).

*The Patterns of the Aggressive Behaviour Itself*

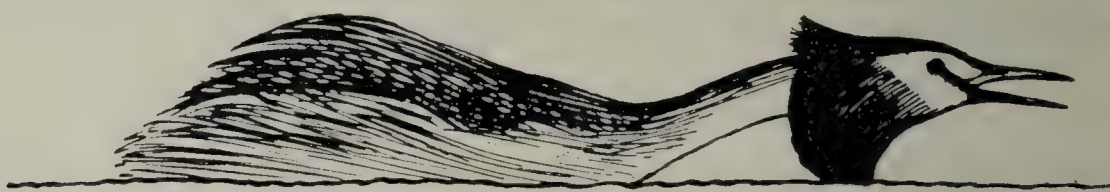
So far only the reasons for, and the results of, the aggressive behaviour of the Great Crested Grebe have been discussed. It is time to deal with the actual patterns of behaviour involved in clashes between rival grebes. No detailed study has yet appeared in the literature, though Gunn (1928) wrote a useful short article on "The fighting methods of the Great Crested Grebe" and brief notes are scattered through the papers of Huxley, and of VENABLES and LACK.

The principles involved in bird antagonisms are relatively complicated and the whole problem is admirably discussed by Tinbergen in a series of works published in 1953. A few general points may be summarized here. Just as in individual (as opposed to factional) hostility in human beings, actual physical fighting is comparatively rare in birds, though rather less infrequent in grebes than in many other species. Strong aggressive inclinations are usually denied uninhibited expression because of a counter tendency to escape. Aggressive birds are thus usually prevented from seriously hurting one another because they are also, to a variable extent, afraid of each other as well. It is of importance to the survival of the species that such a state of affairs should be the general rule: apart from the fatalities that unchecked fighting might inflict, too great an aggressive make-up in the individual bird might seriously interfere with its sexual relations with the opposite sex, *unless some other pattern of behaviour is evolved to counteract it*. The conflict and compromise between attacking and fleeing tendencies, as well as the temporary supremacy of one or the other, is part of the *causal* basis of much of the hostile behaviour of birds and accounts to a very large extent for the relative variability of possible responses in hostile situations. In the Great Crested Grebe these responses include attack and fighting (aggressive element dominant); threat, incipient attack and displacement-activity (attack impulse inhibited by fleeing one), and actual escaping (urge to withdraw strongest of all).



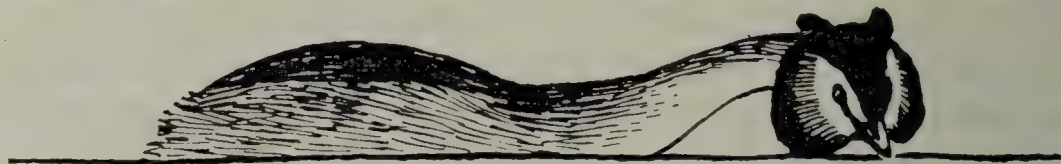
*Threat : The Forward-display*

This display (which Huxley called both the search- and Dundreary-attitude) is the most common item of the grebe's hostile repertory. In intense versions, when the bird is very nearly, but not quite, on the point of attacking, it stretches the lowered neck well forward horizontally so that it is often at least partially awash, though the head itself is usually just clear of the water. The tippets are spread forward (in "curtain-form" according to Huxley's classification) and what appears to be the folded secondaries on the back, or at least their coverts,



Forward-display—higher intensity, directly facing the rival and calling.

are unevenly rucked up so that in extreme cases the white becomes visible (in fact the wings start to unfold). In this posture the angry grebe may often swim towards, or face, the rival directly, so that its body is squarely behind the forward pointing bill. It may call loudly and frequently. The threat-calls are rather variable but always recognizable for what they are. The most common version is a harsh repeated, barking "rraaah-rraaah . . .", broad vowelled (sound as in "bat") and rather coarse-sounding—obviously the call termed the bark by Huxley. Coward's "discordant 'gorr'" refers to a variant of the same note. At lower intensities this barking degenerates into an undertoned, nasal and somewhat metallic "gang-gang-gang". The less aggressive the threatening grebe becomes, the more incom-



Forward-display—lower intensity, head only towards rival.

plete is its display. The first component to disappear is the raising of the feathers over the back. The neck becomes less fully extended and more bent so that the head comes nearer to, and sometimes touches, the shoulders. The tippets are not so noticeably spread or may even be actually depressed. A bird in such a relatively low intensity posture is obviously not very inclined to attack; it may approach the rival laterally, cease advancing, or even swim at an angle away with just the head turned towards it. Sometimes a grebe that has



approached another very purposefully in intense display may assume the less complete posture as it gets nearer, especially if its opponent has stood its ground and perhaps threatened back. Obviously the advancing bird's tendency to escape has been increased. On the other hand, if the other grebe flees, this often tips the scale and turns the threatening bird's display into active attack.

*Threat : Token-diving*

While it is obvious from simple observation that the forward-display functions to stimulate withdrawal in other grebes, the sight of an aggressive bird actually diving in its direction is a still stronger inducement for an intruder to retreat. It is not surprising then to find that a more formal kind of diving—token-diving, as I call it—functions also as a close-range threat, often used in conjunction with intense forward-display. This often occurs when two equally matched grebes are opposed. Facing its rival, one of the birds (or both) may dive as if to attack the other from under water. But there is no force in the spring and no progress made towards the opponent below the surface. The diving bird comes up at the very point of submersion, or even a little farther away from the other grebe than before. Such behaviour is typical of quarrels between neighbours on the border between territories and seldom leads to fighting. The whole situation is in other cases always volatile: a serious fight may break out and one-sided attack is ever imminent, especially if one of the contestants starts to retreat, as often happens.

*One-sided Attack*

In many cases attack is not pressed home because the very sight of an aggressive grebe approaching in a menacing way is enough to send the less purposeful bird into retreat at full speed. Hence, attacks often do not proceed past the initial diving advance. However, if the attacking grebe can surprise its rival, or if the latter does not retire fully but remains on the surface, the former may spear or "torpedo" it from under the water with its dagger-bill. Lunging attacks with the bill are also made across the top of the water, often from the intense forward-display position. The bird opens out its wings and, with neck outstretched, half-flies, half-patters over the surface at the adversary, often then submerging in pursuit, as the other crash-dives away from the onslaught, or going into the forward-display again. Should the aggressor catch up with the fleeing grebe, either below or on top of the water, it attempts to seize the other's head in the bill, rather like it deals with a fish, and to force the unfortunate bird under the surface, getting on top of it and perhaps keeping balance with open wings. As I have already recorded on p. 96, I once saw a grebe held under the water in this way for at least three minutes. The bill-grip needed



to do this must be most powerful and it is little wonder that fish stand small chance of surviving after once being caught.

Now that the attacking methods have been briefly outlined, it is possible to trace the origin of the forward-display : natural selection has simply ritualized the grebe's preparation to attack. Clearly the



Lunging-attack over the water surface.

display is based upon the surface attacking movements. In intense versions of this display, which are very likely to turn into attack, the head is held forward for spearing with the bill and the wings held partly open ready to unfold for the lunging flight at the opponent. Indeed, at times the forward-display may develop into incipient, or "token", attack: the grebe briefly opens its wings, rushes across the water for a very short way, subsides in the bow-wave, and again displays.

### *Fighting*

Fighting between two birds occurs occasionally when both are extremely pugnacious and do not retreat. Usually something is at stake—a nest site, for instance. A typical combat might develop like this. Two rivals, usually males, face each other a few feet apart in full forward-display. Token-diving may occur. Then suddenly, and apparently simultaneously, both grebes leap at each other and clash vertically breast to breast, stabbing and grappling with the bills, both trying to get on top of its rival and hold it down, as described above. The wings may be loosely held open but are not used as fighting organs. Usually, if the fight continues, one bird does manage to force the other under the water, where it struggles to surface and causes a turmoil of water. Another serious encounter may proceed like this. Two pairs—



the owners of the territory and an invading couple—meet on the outskirts of a clump of cover. Neither male will retreat. They face, to all appearances “daring” each other in an upright position with necks stretched up and often slightly held back, tippets expanded, bill open and inclined downwards ready to strike. A very throaty, vulgar edition of the threat-call may be heard (“gghh-aaarr”). Suddenly, as before, fighting may break out. Often before this, however, one



Upright pre-attack posture.

bird may begin to lose its nerve, as it were, and start to waggle its head a little and also to habit-preen, both as in typical head-shaking display, gradually relaxing its strained posture. If the rival makes no movement, it will slowly withdraw, displacement-preening as it goes. Then often the other grebe “comes to” and attacks. There is a distinct resemblance between the upright pre-attack posture and the one assumed during head-shaking courtship; perhaps this is by no means merely coincidental.

I know of no certain case of death resulting from fights between grebes, but have circumstantial evidence that it may occasionally occur. At one of the two small pools near Burghfield, that was occupied by a single breeding pair, I found the body of a freshly killed adult grebe. This bird had a small but deep wound at the base of the neck which could have been caused by a beak stab, for its own bill fitted very well into the hole.

#### *Withdrawal : Escape*

I have just described how a bird in the upright, pre-attack posture may behave as its tendency to withdraw overcomes that to fight. Very often, in less serious circumstances, a grebe that has been threatening will turn away, and, if not pursued, swim off preening various parts of its body as it goes. Such “displacement-preening” is a sure sign



that the bird is now in no mood to attack. The behaviour is very probably caused by the urge to escape from the adversary over-riding that to attack it, for the bird retreats from trouble. John Field has kindly told me his experience with a captured grebe brought to him for release: when being held, this bird both pecked and struggled to get away—and also preened its feathers.



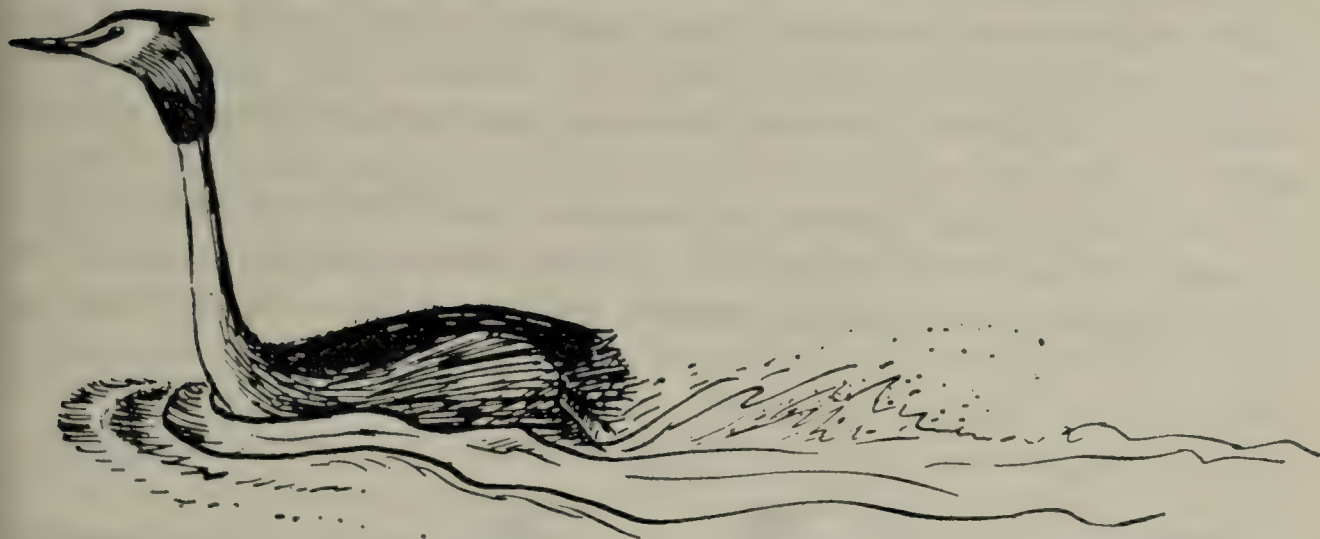
Furtive-posture.

An intruding grebe with a strong tendency to escape is unmistakable. It holds its neck right up into an almost pencil-like thinness, probably to command a wide view, and tightly depresses its tippets and crest so that the head seems unusually slender with little break in its contours. I call this the furtive-posture. The wary bird dives frequently and is always quick to move off if threatened. Though it is obviously merely an elaboration of the normal pre-diving attitude (see p. 96), the furtive-posture serves to reduce the grebe's conspicuousness by concealing the head-ornaments as much as possible, achieving exactly the opposite effect to the threat and courtship displays.

A frightened grebe's usual method of active escape is to dive away from an advancing bird. It will also retreat across the surface. With head up and the tippets flattened, it skids forward on the breast with legs driving powerfully behind and wings waving. This skidding is often followed by diving. Sometimes, however, the fleeing grebe may pause, turn in its tracks and dip its head under the water to look for the other bird, then diving or skidding on again, or relaxing as is necessary. Which of the two ways of escape will be used at any one moment depends, to a certain extent, on the behaviour and proximity of the attacking grebe. If the latter dives while still some distance away, or lunges across the surface at very close range, the other bird will often



dive to evade it. But should the aggressor submerge near at hand, lunge while still some way away, or spear from the depths, then a surface, skidding escape is more usual.



Frightened grebe escaping over the surface.

Two less frequent aspects of escape behaviour remain to be mentioned. I have a few records of individuals bathing in the "frantic" way described on pp. 101-2 after aggressive encounters. Bruce (1950) saw the weaker of two fighting grebes, after a combat lasting several minutes and after it had been held under the water briefly, remain "floating, belly up, with one foot in the air, wings partially opened and its head and neck below the water, giving the appearance of a dead or unconscious bird. It remained in this



"Escape" bathing (see pp. 101-2).

position for about one minute while the other bird swam slowly round it, giving it occasional stabs with its bill but getting no response; next, it suddenly dived from this position without any warning. It reappeared some way off and immediately went into the usual head-shaking display with its mate. From its subsequent appearance and behaviour it did not appear to have been injured".



*The "Cat-attitude" in Hostile Situations*

Instead of fleeing or going into the forward-display, some grebes that are threatened by others, or at least are being approached by birds whose motives are uncertain, may assume a version of the bizarre display called the "cat-attitude" by Huxley. In this, the most striking of all grebe postures, the wings are held half-open at right angles to the body and tilted forward, the white markings showing up conspicuously. The tippets are expanded and the head tucked back so that it is framed by the wings. So far, when sure of the sex of the displaying bird, it is only the female grebe that I have seen behaving thus.



Cat-attitude (high intensity).

Sometimes the odd female involved in a flirtation may go into the cat-attitude when being chivied by the mated pair, the male of which has just been head-shaking with her. Females "advertising" for a mate in open water will often go into the display when approached by other birds (Simmons, 1954). Once such a female was the onlooker in a fierce territorial skirmish between three pairs of grebes. Every time that one of these birds came near her, she went into the "cat". A mated female, alone in the territory and advertising for her mate, half-assumed this display when a pair of grebes started to head-shake near by.

Strangely enough there seems to be only one record of this sort of use of the cat-attitude in the literature, that of Hartley (1940). His remark (on what he considered incorrectly to be unusual behaviour) that "Variations in behaviour such as these may help to elucidate the relationship between the sexual and aggressive displays of the Great Crested Grebe" is very true indeed, as I hope to show later. Briefly, I think that a bird goes into the cat-attitude when its tendency to escape is influenced by a sexual impulse. The display aims to inhibit attack in the other bird—is a "defensive" display.



*Aggressiveness and Courtship Behaviour*

There are several other aspects of the aggressive behaviour of Great Crested Grebes (including the relationships with the Dabchick and Coot), but only those questions outlined below, concerning paired birds, can be given space. These will be briefly treated now and developed further in the section dealing with courtship.

*Head-shaking and Hostility*

Occasionally, during actual hostilities, a bird may head-shake at its adversary of the *same sex*. Head-shaking may occur between unmated birds of the opposite sex in cases of flirtation and during pair-formation. But in the majority of instances that come under the observer's notice, the display is a mutual affair of the mated pair of grebes. Very often in the pre-parental stages of the cycle, this type of courtship is "spontaneous" or virtually uninfluenced by the activities of other birds. It may also be "induced" by outside factors, however, and most of the head-shaking performed during the parental stages is of this nature. An almost invariable feature of aggressive encounters is the induced head-shaking that takes place between the mated birds concerned, during pauses in the skirmishing or afterwards. Thus territory owners unite and display after driving away intruders. The latter, when at a safe distance, may also link up and shake as also may onlookers, not directly concerned in the affair. In view of the extreme frequency of such behaviour, it is rather surprising that no previous writer has stressed this aspect of head-shaking.

*Actual and "Symbolic" Aggressiveness within the Grebe Pair*

I hope that it is obvious from the account so far given that the Great Crested Grebe is potentially and actually a very pugnacious bird. It is rather surprising then to find that so little antagonism occurs between the male and female of the pair, especially when one realizes that the mate has all the external characteristics that otherwise, if it were an outsider, might often stimulate intense aggression in the other partner. Moreover, grebes are "non-contact" birds—that is, except when fighting, copulating, or performing one of the courtship displays (the "penguin-dance"), they do not voluntarily touch another member of the species. (This contrasts with the behaviour of such a group as the little Estrildine finches so well known to aviculturists.) One would expect, therefore, to find overt hostility to be very conspicuous between paired grebes. Even the renowned Lovebirds (*Agapornis*), typical "contact" birds which show every sign of affection to the mate, will at times spar quite fiercely. But the grebes are hostile to one another only occasionally and then quite mildly. Male and female tend to assume lower-intensity forward-displays when approaching each other and, rarely, one may surface under its mate in incipient



attack and give it a scare, the two birds head-shaking after. (Dabchicks will trill in such circumstances.)

On the other hand, grebes do perform what might be considered in other species an abnormally large amount of courtship display. Spontaneous head-shaking is very common during the pre-parental stages and induced display occurs throughout the whole reproductive cycle. Also, during the first four stages of the cycle other courtship activities are not infrequent, particularly what Huxley terms the "discovery" and "display" ceremonies in which the cat-attitude figures prominently. I believe that a large measure of aggression, that might result in overt hostility between male and female, is absorbed by courtship behaviour. Courtship in grebes is caused by a mixture of sexual, aggressive and fleeing impulses, and functions, not only to maintain and strengthen the pair-bond as Huxley suggests (see p. 10), but also to inhibit and absorb aggression. There is much evidence to support this theory, not least of all being the fact that *the display movements themselves seem to be very highly ritualized, or "symbolic" fighting ones*. The discovery-ceremony, for instance, seems obviously a stylized one of attack and rebuff. Further discussion will be reserved for the next section.

(To be continued)

*Note.*—The page numbers quoted refer to the previous instalments of this article published in the current volume of the Magazine.

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## CARE AND FEEDING OF THE COCK-OF-THE-ROCK

By H. A. GERRITS (Curator of Birds, Wassenaar Zoo, Holland)

In the Louise Hall of the Wassenaar Zoological Gardens we have three specimens of the Cock-of-the-Rock, namely a couple of the Orange Cock-of-the-Rock (*Rupicola rupicola*) and a male of the very rare Scarlet Cock-of-the-Rock (*Rupicola sanguinolenta*).

The third representative of this family, *Rupicola peruviana*, resembles *Rupicola rupicola*, and has the same bright orange colour, but has no filaments on the wing feathers.

Although the Cock-of-the-Rock is a rare bird, it will be known to many, who have not seen living specimens, by illustrations which have been published in various books and periodicals from time to time. As the Cock-of-the-Rock lives in the humid, dense, mountain jungles of Guiana, Cayenne, and a part of the Amazons, the installation of the aviary when the bird is kept in captivity is equally important as its diet.



The diet of the Cock-of-the-Rock consists officially of fruit, but in its natural habitat it spends a great part of its life on the ground looking for all kinds of small insects.

Anyone who tries to keep this bird in a cage or in a common aviary with a sand bottom only, and who feeds it with fruit only, will within a very short time have the bird out of condition, and if no alteration is made the bird will very soon die.

Being fully aware of these facts the Zoological Gardens of Wassenaar planned the living surroundings of the Cock-of-the-Rock quite differently and with this and a very carefully composed diet we have succeeded in keeping our three Cocks-of-the-Rock in perfect condition for four years already.

In the first place it is absolutely necessary to keep the birds apart, as these birds are very pugnacious, and although they may get on very well together in the beginning, a disastrous quarrel will sooner or later occur, resulting in the death of one of them. The planning of the aviary was a very careful job. The ground was covered with a thick layer of black mould about 30 inches high, already containing numerous small living insects. Beneath this black mould is a 6 in. layer of broken shells preventing the earth from going sour. The earth is generously sprayed with water daily, giving it the necessary humidity. This provides an excellent ground for the Cock-of-the-Rock, preventing the bird from getting all sorts of foot troubles.

The aviary is about 12 feet by 7 and 8 feet high. The growth of plants should be abundant; numerous and high-growing plants provide the bird with its accustomed quiet surroundings, and to this a few small rocks should be added. Besides their artistic value, these rocks play a part in the feeding. We observed that this bird is very fond of snails, so when obtainable we fed them some daily, and it is most interesting to see how they smash the snail shells on the rocks in the aviary before eating the contents.

Coming back to the aviary, I forgot to mention that the earth on the ground is grown over with grass, while a large shallow water-basin enables the bird to take its beloved bath. Moreover, a few nicely arranged thick branches are added for perching.

The Cock-of-the-Rock's sensibility to temperature gives us no trouble. The temperature of the Louise Hall rises on hot summer days to  $35^{\circ}$  C., and judging from its behaviour the Cock-of-the-Rock finds this pretty hot too; bathing takes place more frequently, and the bird sits in the shadow for the greater part of the day. In winter, however, when it is freezing, and the temperature falls back to  $\pm 5^{\circ}$  C. during the coldest part of the night, the Cock-of-the-Rock reacts quite normally, and there are no signs whatsoever that the bird cannot stand the cold. Of course, these extreme temperatures do not occur



overnight. Between the 35° of August and the 5° of January four months must pass in which the temperature is gradually falling.

Incidentally, I want to point out that the differences in day and night temperature, which sometimes occur in hot summer days, and may be 15° C. on a single night, act extremely favourably on the general condition of the birds. On second thoughts, one has to admit that this is not so remarkable, as in nature, and especially in the tropical habitat, there is an even greater difference between the day and night temperatures.

I shall now discuss the feeding of the Cock-of-the-Rock. In the first place I want to state that the feeding is based on a morning and an evening diet of quite different composition. The morning diet is given at 9 o'clock, and consists of :

3 spoonfulls of boiled rice (the grains must be dry and not sticking together at all) ;

1 grated carrot ;

1 spoonful of dextropur (glucose and fructose) ;

3 spoonfuls of very finely chopped hard-boiled egg ;

3 spoonfuls of a very good insectivorous food, to which dried ant eggs and dried insects are added.

These ingredients must be thoroughly mixed before giving them to the birds.

In addition to this food, six small balls are given to each bird. These balls are the size of a berry, and consist of :

1 chopped banana (this also holds the other dry ingredients together) ;

1 spoonful of rennet ;

Several minerals and vitamins and wheat germ meal ;

1 grated carrot ;

4 teaspoonfuls of insectivorous food.

Each bird is provided with ten mealworms daily.

Finally, twice a week, each bird is given one very young naked mouse.

This morning food, of which the grated carrot is very important with regard to retaining the colour, is replaced at 3 o'clock in the afternoon by a bowl of chopped grapes, banana, and other fruit, as we found that the birds so greatly prefer grapes they should never be omitted.

The left-overs of the morning food can be given the same day to other insectivorous birds, but may under no circumstances again be given to the Cock-of-the-Rock on the following day. The preparation of this food is rather elaborate, but it must be done each day, so that the bird has a fresh supply daily.

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## LONDON ZOO NOTES

By J. J. YEALLAND

A number of rare and interesting birds have been received in the Gardens during the past two months. Those new to the Collection are a Bronze-winged Jacana (*Metopidius indicus*) and a Malaysian Black-naped Oriole (*Oriolus chinensis maculatus*), both presented by Sqdr.-Ldr. K. C. Searle; a pair of Southern Brown-headed Parrots (*Poicephalus cryptoxanthus*) presented by Mr. E. H. Hawke; a Black-throated Chukor (*Alectoris graeca philbyi*) presented by Mrs. Drummond, and a Red-headed Manakin (*Pipra rubrocapilla*) purchased.

Unfortunately the Jacana arrived with a badly injured leg which did not respond to treatment, and the bird had to be destroyed. The race of Brown-headed Parrot that had previously been in the Gardens is the Zanzibar one, *P. c. zanzibaricus* or *P. fuscicapillus* as it used to be called. The Black-throated Chukor was first described in 1934: it is a race inhabiting south-western Arabia. A good coloured plate of this bird appears in Meinertzhagen's *Birds of Arabia*, wherein it is called "Chukor (Hejaz race)" which seems not such a good common name as the more descriptive and more easily pronounced "Black-throated".

A young Coucal, not yet identified, has been presented by Mr. E. J. Boosey, and a Tufted Duck by the Ministry of Works. An Orange-headed Ground Thrush (*Geokichla citrina*) has also been presented.

A fine male Masai Ostrich and two Maccaroni Penguins have been received in exchange, and four Speckled Pigeons, or Triangular Spotted Pigeons as they used to be called, and two Cape Doves have been deposited.

Three Black-footed Penguins have been bred in the Gardens.

Many of the usual birds are nesting and two unusual ones—the Cormorants and the Grey-headed Gallinules. The Cereopsis Goose eggs were infertile as were, yet again, the Emus.

Some of the "homing" Budgerigars have been coming out from the new aviary, but, of course, most of them are nesting, and there should be a better show later on when the young ones fly out.

At the Society's quarterly meeting in April, Head Keeper A. J. Woods was presented with a bronze medal for his skilful care of the nestling White-necked Picathartes that he hand-reared and brought safely to London.

\* \* \*



## BRITISH AVICULTURISTS' CLUB

The forty-seventh meeting of the Club was held at the Rembrandt Hotel, Thurloe Place, South Kensington, S.W. 7, on Wednesday, 11th May, 1955, following a dinner at 7 p.m.

Chairman : Miss P. Barclay-Smith.

Members of the Club : Mrs. H. G. Alderson, P. C. Bath, Hylton Blythe, Miss K. Bonner, Mrs. V. M. Bourne, W. Brain, T. R. W. Crewes, W. D. Cummings, W. T. Dring, Mrs. W. T. Dring, B. H. Dulanty, O. E. Dunmore, Mrs. M. D. Esson, Squadron-Leader C. Everitt, Mrs. C. Everitt, Miss S. A. Fothergill, H. J. Harman, Dr. E. Hindle, Miss S. I. Hobday, G. T. Iles, Terry Jones, Dr. R. S. Kirk, Miss E. M. Knobel, Miss M. H. Knobel-Harman, G. C. Lynch, S. Murray, S. Porter, A. A. Prestwich, R. C. J. Sawyer, D. Seth-Smith, P. Sutton, N. S. Walker, C. H. Wastell, H. Wilmot.

Guests : Mrs. P. C. Bath, Miss E. V. Baxter, M. F. Bevington, Mrs. M. F. Bevington, S. Croucher, Mrs. S. Croucher, Mrs. O. E. Dunmore, Miss M. Elliott, A. C. Esson, W. C. Hall, G. T. Lynch, Mrs. R. Maurice, Mrs. S. Murray, Mrs. G. H. Palmer, A. H. Rudd, Mrs. D. Seth-Smith, A. E. Sibley, Mrs. P. Sutton, Mrs. C. H. Wastell, Miss H. Wastell, I. Watts, Mrs. H. Wilmot, W. A. Wood.

Members of the Club, 35 ; guests, 23 ; total, 58.

The programme for the evening consisted of two coloured sound films kindly loaned by the Commonwealth of Australia News and Information Bureau. The first, "Feathered Fishers," was introduced by Mr. Gerald Iles, and the second, "Australia's Coral Wonderland," by Dr. E. Hindle.

ARTHUR A. PRESTWICH,  
*Hon. Secretary.*

\* \* \*

## NEWS AND VIEWS

San Diego Zoo now has a Mantells Kiwi, presented by the Auckland Zoo.

\* \* \*

Mrs. Enid M. Ammann, of Vancouver Island, B.C., had a nest of three Java Sparrows reared last September. This was quite an event as they seldom, if ever, breed so far north.

\* \* \*

The Medal of the Avicultural Society of South Australia has been awarded for first breedings to :—

Mr. N. Potter, for breeding Smith's Finch-Lark.

Mr. Colin McKechnie, for breeding the Lesser Browed Waxbill.

\* \* \*



C. af Enehjelm, Helsingfors, reports that his Lesser Rock-Sparrows (*Petronia dentata*) have nested successfully: one young one left the nest on 19th April, and another on the 22nd. This is probably a world "first", although Russ does say Prince Coburg-Gotha bred this species in 1873.

\* \* \*

Some other early reports from C. af Enehjelm's aviaries are that three young Three-coloured Parrot-Finches have left the nest, two very fine and one poor: five Bicheno's Finches are out and thriving: there are five young Plum-heads in a nest, almost ready to leave: and one Jameson's Firefinch just hatched; three eggs in a previous nest had young dead in the shell.

\* \* \*

W. Langberg, Copenhagen, has recently had a near-success in breeding a Red-faced Lovebird. The hen laid four eggs and sat for fourteen days. One egg was fertile and was transferred to a pair of Budgerigars. It duly hatched and the young Lovebird was reared until twelve days old when it suddenly died.

\* \* \*

Mr. C. K. Lucas, Editor, *Australian Aviculture*, with Mrs. Lucas, is attending the Empire Legal Conference in London in July. He will be in Europe from 10th May until 8th September, and during his stay is anxious to see as many private collections as possible. His provisional address is care of The Commercial Bank of Australia, Ltd., 12 Old Jewry, London, E.C. 2.

\* \* \*

J. O. D'eath reports that whilst on an Easter tour of Dutch zoos, waterfowl breeders, etc., he visited the well-known collection of our member, D. G. Schuyl, of Rotterdam.

D'eath writes: "Mr. Schuyl has the distinction of being the first in Europe to have a breeding pair of Bronze-winged Duck (*Anas specularis*), native of South America." At the time of D'eath's visit three eggs had been laid, and Schuyl was hopeful of successfully rearing some ducklings when a clutch had been completed.

\* \* \*

A record price of £9,200 was paid at Sotheby's on 21st March, 1955, by W. H. Robinson, the London booksellers, for Audubon's *The Birds of America* (1827-38). This set belonged to Mr. John Heathcote, of Conington Castle, near Peterborough. The previous highest for this country was the £7,000 paid for the Silvertop set at Christie's on 3rd July, 1951, also by W. H. Robinson, on behalf of Lord Hesketh. It is interesting to recall that the published price in London was £182 14s. the set (\$1,000 in America).



Captain Gustaf Lilliehöök, formerly of Skansen Zoo, relates an interesting experience. Some years ago, two young Eagle-Owls (*Bubo bubo*) about four or five weeks old, were found in a forest some distance from Stockholm. Evidently they had been abandoned by their parents, so they were taken to the Zoo. As soon as they were put in the large owl aviary a number of the old owls gathered round the chicks and soon began to feed them. They continued to care for the young ones until they were able to fend for themselves.

A. A. P.

\* \* \*

## REVIEW

RECORDS OF BIRDS OF PREY BRED IN CAPTIVITY. Second edition, revised and enlarged. By ARTHUR A. PRESTWICH. London, 1955. Price 10s.

The first edition of *Records of Birds of Prey Bred in Captivity* was published in 1950, and exhausted by the end of 1951. The second edition, which fills an urgent need, is revised and enlarged, and the records of each species are given as far as possible in narrative form. The author states that some of the quotations, which are given exactly as reproduced, may appear over-long. But as many of the works quoted are scarce and difficult of access, this cannot in any way be considered a drawback. Forty-six species are included, by far the greatest majority being Owls, birds which have always been the most popular among the birds of prey in captivity.

Mr. Prestwich has added another excellent and valuable work to his volumes on birds in captivity, and this book will undoubtedly meet with the same great success as the first edition.

P. B-S.

\* \* \*

## NOTE

CORRIGENDA. Vol. 6, No. 2. March-April, 1955

Page 49, line 15, for "normal white" read "normal, white".

Page 49, line 16, for "Chestnut-flanked Zebra Finches" read "Chestnut-flanked White Zebra Finches".

Page 52, line 7, for "interesting" read "interested".

Page 52, line 45, for "South African Warbling Finches" read "South American Warbling Finches".



## CORRESPONDENCE

## FURTHER NOTES ON NECTAR FEEDING TO FRUIT-EATING BIRDS

Since my notes on the above appeared in the December, 1954, issue of the Magazine, I have carried out a number of experiments, the results of which may be of interest to members. Previous to this I had, as stated, not given nectar to Tanagers, etc., other than with the use of sponge cake. I have now had further opportunity, and have tried Tanagers with a small jar of nectar in addition to my normal food, orange, insectivorous food, sponge cake, etc., and I find that Scarlet Tanagers, Black Tanagers, Violet, Blue and Black, Festive, and Yellow, will consume a one-ounce pot twice a day, but Striated and Yellow-billed do not touch it at all.

Recently I received two Emerald Toucanets from Mexico; these birds are larger than the Banded or Spot-billed. I tried them with nectar with a two-ounce pot twice a day, it was always consumed. All Fruit-suckers (*Chloropsis*) appear to take this very readily, I have had Golden-fronted, Hardwicke's, and Jerdon's, and they all relish this food. It appears from these and previous tests that the large majority of fruit-eating species, no matter the size, will take this food and derive great benefit from it.

P. H. HASTINGS.

182 SULTAN ROAD,  
LANDPORT, PORTSMOUTH.

## BREEDING RESULTS FOR 1954 AT HILLINGDON, MIDDLESEX

Breeding results for 1954 were disappointing, more especially as we had high hopes, having cured the CAT menace with the electric fencer, alas, from now on the weather must take the blame for all failures, and in the case of last year's sample, quite rightly, too.

Of the two pairs of Plum-heads, one pair reared one youngster to ten days, and then unfortunately lost it, owing to a severe drop in temperature and the fact it was on its own and not being brooded by then; they had three eggs in their clutch, two hatched, one being found in the flight soon after. The other pair, as in the previous year, had a clutch of five eggs, all infertile. Of the two pairs of Many-colours, one pair had three fertile eggs, which most disappointingly the hen deserted as they were due to hatch; the other pair, 1953-bred, the hen became eggbound, but recovered on being brought indoors and subjected to heat, laid one egg, and ceased to have any further interest in matrimony for the rest of the season.

Barraband's produced one very fine youngster, a hen, sole survivor of a brood of three; the other two were lost owing to torrential rain and a drop in temperature of 15 degrees, so much water had entered the nest-box the nest had to be changed, but this had no ill-effect on the surviving youngster. Rock Peplars, one of the most charming of Parrakeets, reared one youngster, a cock; this was also rescued and the nest changed, and at the same time three infertile eggs were disposed of. The other pair, 1953-bred, were not given a nest-box, being too young for breeding. A few Cockatiels were bred.

Bourke's were of particular interest inasmuch, as one youngster, of a number bred, was of very bright colour, the back and wings being yellow and pink, the head yellow, not pretty but should have great possibilities for breeding. E. N. T. Vane had a similar coloured bird turn up in his aviaries, which he kindly allowed me to have in the hope they would prove a pair, and thereby produce more unusual colours. A few Gouldians were bred, but the results are not all they should be, owing to squabbling between the pairs, despite numerous nest-boxes of the same type being provided, in the hopes of avoiding just this, so there is evidently no answer but cage breeding, which I do not favour.

J. H. REAY.

CRANMORE,  
THE CLOSE,  
HILLINGDON, MIDDX.



## A RARE AMAZON

It is not often that one picks up a rare bird in one's local pet shop, but I had this unexpected experience not long ago. I was passing the shop in question, when I noticed in the window a small parrot which I could not quite place. It looked as though it might possibly be a small and very immature Cuban Amazon, and as we have several adult Cubans, and as it seemed so desperately timid, falling off its perch if one approached its cage, I decided to buy it. It has now been at Keston for about two years, and though it has come into lovely condition in an outdoor aviary, it remains very dull-coloured for an Amazon.

From the description in Tavistock's *Parrots and Parrot-like Birds*, it would seem that it is the Jamaican or Red-throated Amazon (*Amazona collaria*), although I should have said that our bird, which is much smaller than a Blue-fronted, is more like 10 than 12 inches in length. They are described as "rare in captivity".

It is now an active little bird and a strong flier, with a distinctive medley of cries quite unlike those of the larger Amazons, and is much steadier than it was, now it has regained its powers of flight. Although I don't know its sex, I would like to try and get it a mate, so should be interested to hear from any member of the Society who might, by chance, have one of these Amazons for disposal.

EDWARD J. BOOSEY.

BRAMBLETYE,  
KESTON, KENT.

## MARKED WHITE ZEBRA FINCHES

If Mr. N. V. Whitehouse had taken the trouble to refer to my article on the new Zebra Finch mutation he would have seen that I did *not* call them "Chestnut Flanked Zebras", but Chestnut-flanked *White* Zebra Finches; and the obvious error in my last article (in which "White" was omitted) cannot have caused his concern, since this article and his letter appeared simultaneously in the Magazine.

Furthermore, a glance at the photograph accompanying my original article, of one of our pairs of these birds with the markings clearly shown, would have rendered unnecessary his discourteous and quite uncalled-for remarks about "stock . . . of very poor quality", and "When Mr. Boosey sees some good specimens".

Incidentally, as Mr. Whitehouse claims to be the originator of this variety, and as we were their original importers from Australia into this country, it is obvious that our stock which he "must assume . . . is of very poor quality" must either be birds of his own breeding, or their direct descendants. Thus his derogatory remarks about them bear a striking resemblance to another Australian invention—the boomerang!

As to the naming of this mutation, I should have thought that instead of merely indulging in destructive criticism of other people's efforts in this direction, it would have been more to the point if Mr. Whitehouse had found a suitable name for them himself.

EDWARD J. BOOSEY.

BRAMBLETYE,  
KESTON,  
KENT.



## CANDIDATES FOR ELECTION

- Dr. C. FERNANDO COSTA, Rua Dr. Antonio Martins No/11, Estoril, Portugal. Proposed by J. Yealland.
- E. F. DAVIS, Columbus Zoological Park, Columbus, Ohio, U.S.A. Proposed by A. A. Prestwich.
- Mrs. M. D. ESSON, 3 Western Avenue, Gidea Park, Romford, Essex. Proposed by Miss S. I. Hobday.
- D. B. HALL, "Woodfield," Velley Hill, Corsham, Wilts. Proposed by Miss K. Bonner.
- W. C. HALL, Arden House, 8 Randolph Road, London, W. 9. Proposed by W. D. Cummings.
- PROFESSOR Dr. H. HEDIGER, Zoologischer Garten, Zurich, Switzerland. Proposed by A. A. Prestwich.
- M. S. HENDERSON, Heather Cottage, Potten End, Berkhamsted, Herts. Proposed by B. H. Dulanty.
- ANTHONY JACK, 15 Upper Berkeley Street, London, W. 1. Proposed by A. A. Prestwich.
- G. F. MEES, *Avifauna*, Alphen a.d. Rijn, Holland. Proposed by A. A. Prestwich.
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- E. J. ROKOSKY, Racine Zoological Park, 2131 North Main Street, Racine, Wis., U.S.A. Proposed by Miss K. Bonner.
- CARLETON F. SMITH, 625 Kenmore Drive, San Gabriel, Calif., U.S.A. Proposed by Miss K. Bonner.
- L. R. DI SABATO, 2362 Joyce Avenue, Columbus, Ohio, U.S.A. Proposed by A. A. Prestwich.
- Mrs. P. SUTTON, M.R.C.V.S., 11 Culverden Park Road, Tunbridge Wells. Proposed by P. Sutton.
- Mrs. P. V. UPTON, Park Lodge, Margaretting, Ingatestone, Essex. Proposed by Miss P. Barclay-Smith.
- Dr. LAWRENCE F. WHITE, 1345 North Vermont Avenue, Los Angeles 27, Calif., U.S.A. Proposed by A. A. Prestwich.

## NEW MEMBERS

The twenty-five Candidates for Election in the March-April, 1955, number of the AVICULTURAL MAGAZINE, were duly elected members of the Society.

## RE-ADMITTED

- Mrs. VIRGINIA RAY (formerly Miss Virginia Dolbey), Hulwating Tea Estate, Amhuri P.O., Assam, India.
- Miss I. STONEY, Central Lodge, 55 Central Hill, Upper Norwood, London, S.E. 19.

## CORRECTED NAME AND ADDRESS

- Dr. B. WARREN CURLEWIS, 86 Crescent Road, Newport, N.S.W., Australia.

## CHANGES OF ADDRESS

- W. BIRD, F.R.P.S., F.I.B.P., to The Coach House, 54 Gwendolen Avenue, Putney.
- Captain A. A. CLARENCE, to 25 Elms Avenue, Parkstone, Dorset.
- A. M. CUNNINGHAM, F.Z.S., to 21 Kitchener Road, East Finchley, N. 2.
- Dr. R. S. KIRK, to 3 Park Crescent, London, W. 1.
- R. J. PARREN, to Avenue House, Tenmpon Road, Kings Lynn, Norfolk.

## DONATIONS

(Coloured Plate Fund)

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MISS M. C. MAITLAND . . . . .		10	0
J. A. W. PERRY . . . . .		10	0



## MEMBERS' ADVERTISEMENTS

The charge for Members' advertisements is ONE PENNY PER WORD. Payment must accompany the advertisement, which must be sent on or before the 15th of the month to A. A. PRESTWICH, 61 CHASE ROAD, OAKWOOD, N. 14. All members of the Society are entitled to use this column, but the Council reserves the right to refuse any advertisements they consider unsuitable.

### FOR SALE OR EXCHANGE

One pair of the very rare Scarlet Cock-of-the-Rock, also rare Mexican Emerald Toucanette (*Aulacorhynchus prasinus*), and Green Jays (*Xanthoura yncas*).—Offers to P. H. HASTINGS, 182 Sultan Road, Landport, Portsmouth. Telephone: Portsmouth 4272.

### FOR SALE

Surplus copies of coloured plates that have appeared in recent numbers of the Magazine, suitable for framing. Mountain Blue Robins, Green-headed Olive Sunbirds, Scarlet-tufted Malachite Sunbird, Hartlaub's Touraco, Blue-shouldered Robin-Chat, Scarlet Flycatchers, Wattled Starlings, Ceylon Blue Magpie, Falcated Teal, Rock Grass Parrakeet and Elegant Grass Parrakeet, Lineolated Parrakeets, Brown-headed Parrot, Red-bellied Conure, Yellow-cheeked Conure. Price 1s. each, post free, from the HON. SECRETARY, 61 Chase Road, Oakwood, London, N. 14.

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# AVICULTURAL MAGAZINE



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# THE AVICULTURAL SOCIETY

Founded 1894

**President :**

**Hon. Secretary and Treasurer :** A. A. Prestwich, 61 Chase Road, Oakwood, London, N. 14.

**Assistant Secretary :** Miss Kay Bonner.

Membership Subscription is £1 per annum, due on 1st January each year, and payable in advance. Life Membership £15. Subscriptions, Changes of Address, Names of Candidates for Membership, etc., should be sent to the Hon. Secretary.

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The annual dues of the Society are \$3.50 per year (foreign dues \$3.75 or £1 7s.), payable in advance. The Society year begins 1st January, but new members may be admitted at any time. Correspondence regarding membership, etc., should be directed to the Secretary-Treasurer. Members of the Avicultural Society may become members of the Avicultural Society of America on payment of \$1.00 per year.

## THE AVICULTURAL MAGAZINE

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WHITE-BELLIED AND BLACK-HEADED CAIQUES.



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## CAIQUES

By A. A. PRESTWICH (Southgate, England)

The Caiques are a small group of short-tailed, South American parrots of the genus *Pionites*. Some authorities, including Count Salvadori (1891) who, however, later (1906) accepted, even if grudgingly, the verdict of Dr. Sharpe and Hellmayr, persisted in using the generic name *Caica*. Peters (1937) gives a very concise explanation why *Caica* cannot be used for this genus. He writes :

“ *Pionites* Heine is a substitute name for “ *Caica* Lesson 1831 ”, which however was then employed only in the vernacular sense, “ *Les Caïcas* ”, for a group of four species viz—*Psittacus pileatus* Gmelin, *Psittacus vulturinus* Kuhl, *Psittacus melanocephalus* Linné and *Psittacus leucogaster* Kuhl. Lesson did not use *Caïca* in a nomenclatural sense until 1842, and when he did so it was for a species quite different from any of the foregoing. Bonaparte used *Caica* in 1850 as the generic name of *Psittacus melanocephalus* Linné, but this action was of course invalid by reason of *Caïca* Lesson 1842.”

Genus *Pionites* Heine  
(1890)

Five forms are recognized :

- melanocephala melanocephala* (Linné) Black-headed Caique.
- melanocephala pallida* (Berlepsch) Pallid Caique.
- leucogaster leucogaster* (Kuhl) White-bellied Caique.
- leucogaster xanthomeria* (Sclater) Yellow-thighed Caique.
- leucogaster xanthurus* Todd.

The histories of these will be given in chronological order.

BLACK-HEADED CAIQUE *Pionites melanocephala melanocephala*.

### Characteristics

*Adult*.—Back, wings, and tail green ; pileum black ; cheeks and throat yellow ; lores and a streak under the eyes green ; a collar



round the hind neck, bordered above and below with some bluish feathers, orange-rufous; breast and abdomen white cream-colour; sides of the breast, axillaries, flanks, and thighs orange-yellow; under tail-coverts yellower; primary-coverts and primaries black, with the outer webs deep blue, edged with green; carpal edge partly yellow; greater under wing-coverts and quills below black; tail-feathers edged with yellow at the tip, underneath brown with golden reflexions: bill horn-black; feet and naked skin round the eyes black; iris with an inner ring brown and an outer one red.

Total length about 9·3 inches, wing 5·5, tail 2·8, bill 1, tarsus 0·5.

*Female*.—Like the male.

*Young*.—Feathers of the pileum brown with green edges (*Wagler*). (*Salvadori*.)

#### *Distribution.*

Eastern Venezuela and the Guianas, southward to the Rio Negro and the Rio Branco, Brazil (*Peters*).

#### *Narrative*

The first notice of any bird in this group is in 1751, when George Edwards, Library-Keeper to the Royal College of Physicians, gives a very creditable coloured drawing of a parrot he describes as the "White-breasted Parrot". After a somewhat quaint, but nevertheless accurate, description, Edwards writes of his subject:

"I found this Bird in the Hands of a Dealer in Foreign Birds, who kept a Publick House in *White-Hart Yard*, near the *Strand*, *London*. He assur'd me it was brought from the *Carraccos*, on the Continent of *America*, a Part of the *Spanish* Dominions. I have examined all the Accounts I can find relating to Parrots in different Authors, but can find none that agree with the above-described. It is a very beautiful little Parrot, and being in all Probability a Non-descript, I hope it will be thought worth Publication."

Buffon describes (1779) and gives a painting (1783) of what he calls "La petite Perruche Maypouri, de Cayenne".

In explanation he tells us (a free translation):

"This name suits this bird very well, because it whistles like the tapir, which in Cayenne is called *maïpouri*; and although there is an enormous difference between this large quadruped and this little bird, the whistle is so similar one could mistake it."

He goes on to say:

"it does not come near human habitations and usually keeps to woods surrounded by water, and even the trees of flooded



savannas ; it makes no other sound than its shrill whistle which it often repeats in flight, and it never learns to talk.

As a rule they fly in small flocks, but often without attachment for each other, for they fight frequently and unmercifully : when some are caught while hunting, there is no means of keeping them alive ; they stubbornly refuse to take food and rather starve to death ; they are so stubborn that they cannot even be made docile by blowing tobacco smoke, which is the usual way of training even the most obstinate parrots. If they are to be reared they must be caught young, and they would not be worth the trouble of rearing, if their plumage were not so beautiful and their form so remarkable."

Various later writers include, with and without acknowledgment, Buffon's "field-notes", whole or in part. It would be of interest to know the source of his information, as it is unlikely to have been first-hand.

The majority of the great ornithologists of the late eighteenth and early nineteenth centuries included this species in their works. The principal are :

Linné (1758) responsible for the specific name when he describes the species as *Psittacus melanocephalus*.

Brisson (1760) calls it *Psittacus Mexicanus pectore albo* and *Le Perroquet a poitrine blanche du Mexique*.

Latham (1781, 1790, 1822) refers to it as the White-breasted Parrot, and repeats much of what Buffon has told us.

Miller and Shaw (1796) give a good coloured plate of *Psittacus atricapillus*, here said to be a variety of *P. melanocephalus* Linnæus. In this variety "the hind-part of the neck . . . is of a pale crimson, or rose-colour". Then follows a summary of Buffon's "field-notes".

Levaillant (1805) deals exhaustively with *Le Perroquet Maïpouri*, and gives two coloured plates, male and immature—in the latter the feathers of the breast are shown as of a greyish-white with orange scalloping to the edges ; the tail and vent, light brown with greenish scalloping ; and the nape, crown, and throat, all scalloped with green : and, of course, Buffon's observations are given.

Brehm (1842) gives a condensed version of Buffon and Levaillant and a coloured plate of *Psittacus melanocephalus*.

Reference should also be made to Shaw (1812) White-breasted Parrot ; Vieillot (1817) *La Perriche maïpouri* ; Kuhl (1820) *P. melanocephalus* ; and Spix (1824) *P. melanocephalus*.

During the following fifty years there are, of course, many references to this Caique but they are, in the main, just references and none is very informative.



It is left to Sclater (1887), writing on British Guiana and its birds, to express an opinion differing from Buffon's. He writes :

"The *Caica* [*melanocephala*] is remarkable for its excessive friendliness and sociability. I brought a specimen of it home with me, which is certainly the tamest bird I have ever come across."

And Lloyd (1895) concurs when he says :

"*Caica melanocephala* is one of our handsome little parrots that takes readily to domestication, becoming very affectionate, allowing itself to be handled and petted without the slightest resentment. It is particularly plentiful on the Mazaruni and Puruni Rivers, where it nests in holes high up the trunks of trees. We have often tried to get at the eggs, but could never succeed."

It does seem a little remarkable that American Museums of Natural History are able to publish volumes of six or seven hundred pages on the birds of various South American countries, and yet tell us little or nothing of the habits of the birds catalogued. They are, in fact, mainly just distributional lists of where specimens, often many, have been procured.

#### WHITE-BELLIED CAIQUE *Pionites leucogaster leucogaster*

##### *Characteristics*

*Adult*.—Back, wings, and tail green ; pileum, hind neck, and upper ear-coverts orange-rufous ; lores, sides of the head, and throat yellow ; breast and abdomen white cream-colour ; axillaries orange-rufous ; flanks and thighs green ; under tail-coverts yellow ; wings as in *C. melanocephala* ; tail underneath dusky golden : bill white ; naked skin round the eyes reddish flesh-colour ; feet pale brown ; iris reddish brown.

Total length about 9.5 inches, wing 5.5, tail 2.7, bill 1.03, tarsus 0.55 (Salvadori).

##### *Distribution*

Valley of the lower Amazon (Peters).

##### *Narrative*

*Psittacus leucogaster* was first described by Kuhl (1820) after Illiger. The first coloured plate is by Lear (1832) when he depicts *Psittacus badiceps*, Bay-headed Parrot. There is no description but the plate shows a White-bellied Caique with the forehead and crown chestnut-brown.



Bourjot Saint-Hilaire (1837-38), in the third (supplementary) volume of Levaillant's monograph of the parrots, gives a good plate by M. Werner of *Le Perroquet à ventre blanc* (*Psittacus leucogaster*) which he considers a mere variety of *melanocephala*.

von Pelzeln (1865) expresses the view that *P. xanthomeria* and *P. leucogaster* are only varieties of *P. melanocephala*. Dr. Finsch (1868) maintains they are independent species, stating that colourings make it problematic whether they are varieties or birds of different ages. Later, von Pelzeln (1871) admits that *P. leucogaster* may be considered an independent species, but still considers it not improbable that *P. xanthomeria* is only a variety of *P. melanocephala* or of *P. leucogaster*.

#### YELLOW-THIGHED CAIQUE *Pionites leucogaster xanthomeria*.

##### *Characteristics*

*Adult*.—Very much like *C. leucogaster*, from which it differs in having the thighs and flanks lemon-yellow instead of green (Salvadori).

##### *Distribution*

Eastern Ecuador and eastern Peru to the Rio Machados western Brazil (Peters).

##### *Narrative*

Dr. Sclater (1857) "*On a Collection of Birds transmitted by Mr. H. W. Bates from the Upper Amazon*" writes :

"This apparently new species, of which the only two specimens sent have passed into the collection of the British Museum, closely resembles *C. leucogastra*, Kuhl (*badiceps*, Lear), but has the flanks and thighs yellow instead of green, and exhibits some minor variations in shades of colouring."

But for brief notices which raised doubts as to the validity of the species this Caique was virtually still unknown when "Two specimens of the rare Yellow-throated Parrot, *Caica xanthomera* (G. R. Gray), . . . along with the Pygmy Marmoset, also quite new to the collection" of the Zoological Society of London arrived on 27th April, 1877. Two years later Dr. Sclater (1879) refers to these birds when he writes :

"Of this beautiful Parrot [*Caica xanthomera*] we received two living examples from Yquitos, on the Peruvian Amazons, in 1877, as already recorded. One of these is dead ; but the other is now in fine plumage, as the accompanying sketch by Mr. Smit (Plate xxviii) will show. Besides the type in the British Museum, from the Rio Javari (Bates), and a single example obtained alive by Natterer on the Madeira (Pelz. Orn. Bras. p. 264), our specimens are, I believe, the only ones known of this species."



PALLID CAIQUE *Pionites melanocephala pallida*.*Characteristics*

Similar to *C. melanocephala*, but with the thighs, flanks, and also the under tail-coverts paler, lemon-yellow, with no orange tinge (Salvadori).

*Distribution*

Eastern Colombia to eastern Peru (Peters).

*Narrative*

von Berlepsch (1889) says (a free translation) :

“ The birds of eastern Peru and eastern Ecuador differ from those of Trinidad (which presumably are to be regarded as types) and Guiana by the much brighter, almost citron-yellow colouring of the hypochondria and tibia, which in the birds from Trinidad and Guiana are more or less orange-red or salmon coloured. The throats and sides of the head and subcaudal feathers are also more brightly yellow in the birds of the upper Amazon. These should perhaps be separated as *C. melanocephala pallida* Berl.”.

Reference to Trinidad is, to say the least, a little puzzling.

Count Salvadori (1891) pronounces :

“ As the differences pointed out by Graf von Berlepsch as distinctive of the birds from E. Peru and E. Ecuador seem constant, I have been induced to regard them as belonging to a distinct species ” [*Caica pallida*].

Between 1875 and 1880 Stolzmann explored very extensively in Peru, and is responsible for many of the observations in Taczanowski's *Ornithologie du Pérou* (1884-86). Of *Caica melanocephala* (actually *P. m. pallida*) he says (a free translation) :

“ Not very numerous at Yurimaguas, keeping together in small flocks composed of a few pairs. It appears that when eating on a tree they place a sentinel, for on two occasions I have seen a single bird perched on top of a tree in complete inactivity, while the whole flock was occupied. On flying away they produce a loud cry, *tschirli-tschirli*. While they are resting in the crown of a tree, an individual can be heard to make strange, single sounds which are not very harmonious. According to the inhabitants of the district it nests in the holes of trees. At the end of April I have seen young ones in full plumage.

In the sierra of northern Peru they are often reared in captivity and are valued much more than all the other parrots. I must confess that of the large number of domesticated parrots I have seen during my travels, I have never seen any as pleasing or so



amusing. For several months I reared a pair and I brought one of them to Europe; these are my observations about these individuals. They are as sociable as other parrots; when they have no companion of their own species in captivity they soon attach themselves to some other parrot, even if it is much larger. When one of mine was stolen before my departure for Europe, the other became attached to a *Chrysotis* which it never left. As soon as they were separated, the *Caïca* used to call his companion by producing a plaintive sound, *piou*. Their movements are quick and precise; on the ground it runs more quickly than all the other parrots, hopping to quicken its pace. It climbs on sloping branches with great skill, without using its beak like the others. It eats everything: rice, potatoes, flax seeds, bananas, cherries, meat, etc., preferring above all meat and rice. Grasping the food in one claw, it holds it far from its body and lifts it up much more than other parrots, which gives it a steady and firm footing.

It had an antipathy to women and children which developed during the voyage to Europe. As soon as it caught sight of them it came down from its perch and approached in order to bite the hated person. Once it bit a dwarf, mistaking him for a child. With men it lived on the best of terms and only used its beak in exceptional cases. It was very fond of playing with the other parrots, chasing them, seizing their feet, and hopping round them in a most comical manner when this occurred on the ground.

It hated all the small species of parrots and on the other hand was afraid of the *Aras*. The *Brotogerys* which were reared with it used to run away from it and at every opportunity it used to bite and molest them.

They learn to whistle perfectly but are not capable of grasping any melody; the scale of their voice is fairly extensive and their whistling is very pure. As soon as one begins to whistle at them, they seize the notes, but interpret the melody in their own way; they conclude without any discord the melodies started for them, but always in their own style. It whistles in all positions, perched, lying on its back, hanging head down from a branch, always with the same ease and always with the same purity and intensity. At Yurimaguas I noticed that they liked to whistle at the approach of a storm; sometimes it is difficult to persuade them to whistle. They learn to pronounce *piouitschou*, but in a louder voice than the *Brotogerys*.

I observed that they have a liking for passing through narrow openings. When there is a wide entrance, an open door, and a narrow opening at the side, they prefer to choose the latter, often turning the body sideways and spreading out their wings to



reduce their circumference. The inhabitants of the country assert that they spend the night in the holes of trees, which is likely, since in captivity they do not like sleeping on a perch. Mine used to sleep in a box or under a pot. When they are placed there for the night they begin to whistle and chatter.

The inhabitants teach them to dance. In the evening they put them on a table illuminated by a candle and sing or whistle while clapping their hands ; the parrots hop to this noise. For such a dancing parrot one pays there from 40 to 50 francs."

*Pionites leucogaster xanthurus.*

*Characteristics*

Pileum, sides of the head (down to and including the auriculars), hind-neck, and sides of the neck dull apricot orange ; back, rump, upper tail-coverts, upper wing-coverts, and secondaries externally bright parrot green ; tail deep chrome to primuline yellow, some of the rectrices with a basal area of parrot green, concealed except on the middle pair ; primaries and their coverts with the inner webs black, and the outer webs Berlin blue with a narrow outer margin of green ; under wing-coverts parrot green, the carpal edge mixed with yellow ; throat, cheeks, and sides of the neck below empire yellow ; breast and abdomen soiled white, with a wash of pale yellow in fresh plumage, the sides shaded with light salmon orange ; tibiae and under tail-coverts empire yellow ; "iris cadmium yellow ; eyelids white ; feet flesh white ; bill bone white." Wing (type), 141 ; tail, 79 ; bill, 25 ; tarsus, 16 (Todd).

*Distribution*

Rio Purús, Brazil (Todd).

*Narrative*

During the early 1920's the Carnegie Museum received several collections of Brazilian birds from Samuel M. Klages. Included were three specimens of a Caique considered by Todd (1925) to be new, and described and named by him *Pionites xanthurus*. No mention of this sub-species is made by either Peters (1937) or Pinto (1938) and one can but conclude that neither recognizes it.

Todd writes of *xanthurus* :

"This species is obviously the Rio Purús representative of *P. xanthomeria* (Sclater), which it closely resembles in all respects except for the color of the tail, which is mostly yellow instead of green, the shafts of the feathers being white. We have three specimens, a pair in worn plumage from Hyutanahan, and a single female in fresh feather from Nova Olinda, which latter



has been selected as the type. The single male shows even less green on the basal part of the tail than either of the females."

There is, as yet, no vernacular name for this sub-species.

#### IN CAPTIVITY

*Importation.*—Although the Caiques occur over a very wide area they are seen seldom enough in captivity to fetch a relatively high price. They have never been imported in any number, merely a pair or an odd bird at very irregular intervals—this applies to Great Britain, at least.

**BLACK-HEADED CAIQUE.**—The "White-breasted Parrot" found by Edwards in about 1750 in the hands of a publican-dealer was presumably a live bird, in which event it is by far the earliest recorded importation of a Caique of any species.

The Zoological Society of London purchased an example in 1855 and two in 1866, and since then has owned a good many, mainly single birds.

During the last thirty or forty years there have been pairs in most of the larger private collections—H. D. Astley, H. Whitley, J. Spedan Lewis, Mrs. G. T. Clark, and others.

This Caique is not uncommonly kept in the United States where, in some regions, it is known by the not inappropriate name "Little Breeches", or as "Dirty Face".

**PALLID CAIQUE.**—The Zoological Society of London purchased a bird listed as *Caica melanocephala* (Pale variety) on 3rd November, 1891. This was presumably a specimen of *pallida*.

**WHITE-BELLIED CAIQUE.**—This is the most commonly imported species. A specimen was purchased by the Zoological Society of London on 13th October, 1880, and a second on 4th April, 1883. Since then there have, of course, been others in the Gardens.

Pairs have been in the collections of Mrs. Dalton Burgess, H. Whitley, J. Spedan Lewis, etc.; and Miss Kay Bonner has a pair at present.

**YELLOW-THIGHED CAIQUE.**—Two specimens were purchased by the Zoological Society of London on 27th April, 1877.

I have no record of later acquisitions, or of examples in private collections, but there were fairly frequent, small importations in the 1920's and early 1930's.

*Character.*—Buffon did the whole genus a great injustice when he implied its members were intractable. I think everyone who has ever possessed a Caique will agree they are amongst the most desirable of all species of parrots. They are very intelligent, even more playful and amusing than some of the very playful lorikeets and, when tamed, are most affectionate. Some, however, fail to advance beyond the merely friendly stage, remaining very nervous, and refuse any undue human familiarities.



Being very active birds they should not be confined permanently in parrot cages. They are best suited to aviary life, or at least have an outside flight in which they can exercise.

Much could be written about their general behaviour : the dignified manner, holding themselves very upright, in which they walk along a branch ; the way they hang from a branch or wire-netting by their beaks only and while thus suspended in the air box and spar ; how they wrestle on the ground, rolling over and over and playing generally like a couple of kittens—all of which must be seen to be properly appreciated.

The Caique would indeed be the perfect pet but for one very great drawback—its voice. Its cry is loud and can perhaps best be described as a shrill whistling-shriek. They delight in uttering it repeatedly and often for minutes on end ; such is its shrillness that even their greatest admirers must admit it is very trying indeed, so much so that it is virtually impossible to keep a pair in a house, although a single bird would naturally prove less noisy and there might even be an occasional very tame specimen that has been taught to forget this distressing form of vocal expression.

They are credited with being very sensitive to cold, but once fully acclimatized they seem reasonably hardy. They should, however, always be shut in their shelters at night and in the winter artificial heat must be provided : we maintain a minimum temperature of 50° F. Naturally, they need warmth and plenty of care when newly imported.

Food presents no difficulties. In theory they should be fed on a varied seed mixture consisting of four parts sunflower seed, three parts canary seed, two parts oats, two parts buckwheat, one part white millet, one part hemp, and a few peanuts : but preferring sunflower seed to all other they will most probably, in the usual parrot manner, pick this out and scatter most of the rest. Actually, we have not found that almost unlimited sunflower has had any harmful effect. It is, however, very important that they have plenty of good, sound fruit—soft, sweet apple and grapes being the favourites. Garden peas in the pod are a welcome addition when in season and an occasional soaked millet spray is appreciated.

*Breeding.*—Caiques pair readily in confinement but aviculturists have had little success in breeding them. This is probably mainly due to lack of effort, few having experimented in this direction. Sexing presents a matter of considerable difficulty. The sexes are identical as regards plumage and the only difference lies in the beak. When compared the beak of the male is seen to be broader and rather shorter than that of the female which has altogether a more “ hennish ” appearance. But this comparison is not easy and requires experience in such things.



The only recorded breeding success in Great Britain is Lady Poltimore's hybrid, Black-headed  $\times$  White-bellied Caique, reared in 1936. In this event four young were hatched; two died within a few days, one lived for six or seven weeks, and one was reared: "exactly like the male in plumage, except that his thighs are green like the female, and he has more of her salmon colour at the back of his neck. At a distance, it is difficult to distinguish him from his male parent, and his colour and plumage are as good as that of the adult pair" (Poltimore, 1936). The young one proved to be a male and lived for nearly two years.

In the United States, Gilbert Lee, of Los Angeles, has been successful in breeding the White-bellied Caique. He had three young ones hatched on 1st, 2nd, and 5th April, 1932, and all three were fully reared (Lee, 1935).

*Expectation of life.*—The potential longevity of Psittacine birds is well known to be high, although well-authenticated records are considerably lower than the ages assigned by popular repute. Exact records for *Pionites* are few, but it is certain the maximum age is considerably in excess of any mentioned here.

Dr. Chalmers Mitchell (1911) in his "*Longevity and Relative Viability in Mammals and Birds*", based on examples kept in the London Zoological Gardens, includes the following figures in the PSITTACI:

	No. of Indiv.	Av. dur. in months.	Max. dur. in months.
<i>Caica</i> , whole genus . . .	16	47	248
<i>C. leucogastra</i> . . .	2	6.5	8
<i>C. melanocephala</i> . . .	12	39	104
<i>C. xanthomera</i> . . .	2	130	248

Dr. Mitchell points out that, in the period covered, the examples of the PSITTACI group "were kept in a rather crowded house, well warmed in cold weather. A certain number of them were placed out of doors (chiefly Macaws and Cockatoos) in good weather, but were chained to perches. The vast majority of them were in relatively small cages, and never had access to open air, whilst none had the opportunity of flying". The conditions under which the Caiques were apparently kept cannot be said to have been conducive to health. The wonder is that one Yellow-thighed managed to attain an age of over twenty years in captivity.

Records for the period 1911 to 1926 are not readily accessible, but search reveals that Black-headed died in 1917 and 1918 after 125 and 147 months respectively. The later records show that nine examples died in the Gardens between 1934 and 1946. The present Parrot House was opened in 1930 and no matter what one's opinion of it there is no gainsaying the conditions are vastly superior to those obtaining in the old. The later period shows an improvement of approximately 20 per cent in the average for the whole genus, and



the improved conditions must in part be responsible for this. It must be stressed that these figures refer only to the birds' life in the Zoo. It is very difficult to draw any conclusions because almost invariably little or nothing is known of their previous history: some are undoubtedly newly-imported, whereas others have probably been pets for a number of years. For instance, the Yellow-thighed listed below is said to have been in the possession of W. W. Cobbett for some thirty-five years prior to its being presented: if indeed, a fact, this would make it at least forty-two years old at the time of its death.

	No. of Indiv.	Av. dur. in months.	Max. dur. in months.
<i>Pionites</i> , whole genus . . .	9	56.45	178.5
<i>P. leucogaster</i> . . .	4	64.7	178.5
<i>P. melanocephala</i> . . .	4	42	146
<i>P. xanthomeria</i> . . .	1	81.5	81.5

Major Flower (1923) records that a White-bellied Caique died on 10th June, 1923, after being in the Giza Zoological Gardens, Cairo, for 13 years, 7 months, 8 days.

A Yellow-thighed lived in the Philadelphia Zoo Gardens for 9 years and 8 months, dying in 1924; and another, in the National Zoo Park, Washington, was still alive in 1929, after 6 years and 10 months.

The fully authenticated record, however, must surely be held by the pair that successfully reared a young hybrid for Lady Poltimore in 1936. They are still alive and flourishing, after being in Lady Poltimore's possession since the spring of 1931, prior to which Miss E. M. Knobel had them for several years. They cannot therefore be far short of thirty years of age.

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In this review of the genus *Pionites* no attempt has been made to cite every paper mentioning or discussing it. To do so would entail a bibliography of very considerable length. Such were formerly thought to reflect the learning of authors but nowadays are mainly a source of annoyance; in addition, their compilation may be considered a waste of time and money. The literature has, however, been searched very thoroughly and the following are the more important references.

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## OBSERVATIONS ON A BLACK WOODPECKER IN CAPTIVITY, ITS PERCEPTION OF FOOD THROUGH LAYERS OF WOOD

By EUGENIO CALLEGARI (Ravenna, Italy)

About the middle of June, 1954, I found the nest of a Black Woodpecker (*Dryocopus martius*, L.) in the valley of Genoa, about 1,600 metres above sea-level. It was in an old beech tree, not 4 metres above the ground, and contained two fledglings. One was within the hollow, the other was leaning out as far as its abdomen, and stood as stiff as stiff could be, hoping to escape my notice. I lay in wait behind a rock to identify, if possible, the food brought by their parents, a matter of great difficulty, as they swallow most of it—only the last morsels being visible stuck in their beaks.

As soon as the fledgling thought it was alone it drew back, and twenty minutes afterwards one of the parents appeared. When it noticed me it at once gave out its alarm note, but did not draw near, thus making the identification of the food quite impossible.

Fearing that the young ones might abandon their nest (their feathers being almost completely developed) I hastened to catch them, and started back to Ravenna to try to bring them up.

My first care was to inspect their excrement with a view to finding out what would be suitable food. This consisted partly of chitinous remains of big, black ants, of the genus *Camponotus* Mayr., which make their nests in old trees, and partly digested matter, probably derived from larval stages of the same. I did not, however, deem it necessary to feed them on their natural food, but I replaced it by mole-cricket at first, and then by a mixture of dry ant-pupæ, some meal derived from silk-worm larvæ, tiny bits of ox heart, bread, and milk.

The two creatures, however, were shy and had to be fed artificially, the food being forcibly thrust down their throats. They showed a dislike for this food and also for living silkworms. Then I noticed that one of them was suffering from bad diarrhoea and had got very thin. I then made up my mind to catch wood-boring ants, my only hope of saving the young birds from certain death. To begin with I found this very difficult, but little by little I got into the way of it, and was encouraged in this odd job of wood-cutter by the fact that the youngsters began to welcome the ants and still more their pupæ. So in the long run they became tamer and even seemed inclined to swallow the pincers with which I fed them.

In about a month the sick bird increased in weight, strength, and liveliness and became quite normal. I placed them in a comfortable aviary, with trunks for perching; they recognized my step and my



brother's ; called to us when hungry, though inclined to be shy in our presence. They gave a trill of joy at our entrance, but when we stretched out our hands towards them often grew suspicious and drew back without taking the food. They were even more suspicious with strangers.

When they had completely recovered I fed them again on the usual mixed food, but shortly afterwards the other bird had diarrhœa trouble too. I hastened to gather *Camponotus* pupæ, but it was no use ; four days later it died. I felt very sorry, for Woodpeckers are more charming than most birds.

As regards the diarrhœa troubles from which both birds suffered, I ascribe them to food fermentations due to the heat of summer. I therefore prepared fresh food twice a day, and the surviving Woodpecker is still in perfect health. I feared they might suffer from the heat, but could not prove this.

Ginanni, in his work on Ravenna's pine woods, not only states that these birds haunt this zone, but breed in it as well. Before coming to the point, I want to state that I gave the two Woodpeckers various kinds of Lamellicorne coleoptera larvæ, *Cetonia*, *Melolonta*, and some others not yet identified, which they consistently refused. On the other hand, they seemed to welcome either larvæ or nymphæ, of *Cerambycide* coleoptera. They also refused either fresh or dried fruit.

When out for a walk one day towards the end of October I happened to come across two small stumps, which I uprooted easily. The stumps were intersected by a maze of burrows, containing the appetizing ants, which I offered my captive bird. The Woodpecker approached, rubbed its long verniform tongue over the burrows, and drew out its favourite ants. A few days later it showed no further interest in the two stumps, though many burrows had not been inspected. The only thing I could do was to remove them from the cage. In order to satisfy my curiosity, I then cut them to pieces with a hatchet, and was surprised to find only one ant left.

On another occasion I gave the bird a bigger stump to inspect, but it behaved in just the same way. It started rubbing its tongue over it just as before, and taking no heed of the burrows leading outside, and cut holes exactly where the ants were to be found. But after a while this stump too was no further use, and when I cut it to pieces not one ant was found, in spite of the spaces left unexplored by the taps of the Woodpecker.

I applied to Dr. Branzanti, *dell' Ufficio Agricolo Patrimoniale*, who kindly gave me permission to take from the pine woods as many stumps and poles attacked by ants as I wanted. The results were just the same. Even when I put stumps of about a hundredweight each in the aviary, after a certain time the Woodpecker ceased to be interested in them, and I could but realize that the supply of ants



had either disappeared or was reduced to a few specimens. Very often the bird reached the hidden prey through layers of wood completely free from burrows, and still in a perfect state of preservation on account of the resin permeating them.

I find no hint of this in the works on ornithology at my disposal, as the various authors are of opinion that the bird locates the prey by introducing its tongue into the burrows of the grubs. Only in the work *Birds of America*, prepared under the auspices of the Audubon Society, I came across these words: "They locate their hidden prey with great accuracy, and often cut small holes directly to the burrows of the grubs."

In short, the hidden prey is located perfectly in the stems of trees by the tongue, no attention being paid to the outside holes. Woodpeckers are actually never disappointed in their work.

Let us consider the big clefts bored in the stems of trees by Black Woodpeckers to reach their prey, clefts often several centimetres deep. To justify these phenomena we must acknowledge these creatures to be gifted either with the power of reasoning or with a "sixth sense". I entirely reject the former hypothesis and accept the latter, based on experience.

I cut three poles more or less alike out of a wooden fence, one of which contained an ants' nest. I stopped the outside holes with beeswax and placed them simultaneously in the cage. Eight minutes afterwards the Woodpecker had swallowed its favourite grubs, leaving the other two poles untouched. After some days, when the ant supply had failed, it drew out of one of the other two poles some very tiny xylophagous larvæ. I made a small box of fir wood, the sides of which were three centimetres thick. Inside, by means of partitions, I made eighteen cells, of which eight contained sawdust, six ants, and four were empty. The Black Woodpecker inspected the box by rubbing its tongue over it, and cut directly to one of the cells containing the ants, close to one of the inside wooden partitions. A short time afterwards it left off and took no further interest in the box, and further efforts on my part to get it to search again were useless. Also in vain was my cutting two little holes with a nail directly to two cells containing insects. There was nothing left for me to do but take the box out and replace it with stumps which were at once exploited to the utmost. I got a tree trunk hollowed out with a lathe, leaving an external thickness of 3 centimetres; then, with thin wooden partitions, I delimited seven spaces of 3 centimetres thick each. The inmost space I called Number 1, and that nearest the end Number 7. The numbers 1-3-6 contained ants, the others were empty or full of sawdust. The Woodpecker started cutting a hole directly to Number 4, but it scarcely cut it, then it moved on to Number 3, cut a first hole, out of which it seized the ants, then enlarging it, invaded Number 4. I must



emphasize that these spaces were 7 centimetres in diameter, through which the bird had to thrust its head without spoiling its feathers. Then it cut another hole in connection with Number 3, angled at about 40 degrees in respect of the first. Before eating the ants it cut a hole directly to Number 1, then another angled about 90 degrees in respect of the first. During this process it hopped every now and then to the first hole to eat the ants that were coming out. This would support the theory of some authors that Woodpeckers, to drive out insects, tap the tree-stems, and then run to the holes to seize those that come out.

On the morning of the second day it had located the third space, Number 6, boring it twice. This time, however, to get at the ants it cut also the next partitions, but the ants had moved on through these holes to spaces previously empty. Late in the afternoon I removed the stump, fearing the bird might hurt itself with the nails, and detected a third hole in space Number 1, angled about 180 degrees in respect of the first. Thus the Woodpecker bored eight holes through sound wood, 3 centimetres thick, one hole being cut uselessly, while the other seven were of the right size, showing its ability to locate food with its tongue.

I again took the above-mentioned box, and to attract the attention of the Woodpecker I enlarged the two holes I have already mentioned with a big nail, and introduced two live ants. After a short time the bird noticed, and swallowed one of them, then it started enlarging the hole I had made. After boring down 2 centimetres it left off, and resumed working in the direction of the same cell but to one side of it where the two box sides joined together. After a short time, however, it left off again. A few minutes later it caught sight of the second ant and ate it up, then it bored the cell and swallowed the food within. Afterwards it located a third cell supplied with ants, and this time too it cut a hole near the inside wooden strip. Then it left off again for good.

Its bewilderment misled me too and suggested several hypotheses to me, the most logical of which I think is that its bewilderment must depend on the fact that the cells, wherein I had put the ants, were not full and therefore the air between the ants and the lid acted as insulator. I changed position in the box so that the ants might be in contact with the outside walls.

I placed some ants as a bait in the cell it had cut the previous day ; but the Woodpecker preferred basking in the sun, and the ants went away. All at once it caught sight of one of them and ate it up. Then it began to rub its tongue against the box at the point where the wooden strips joined together, though the tongue was rubbed so rapidly against the box the bird located the right spot, where it cut a hole and gained the reward it deserved ; then, again bewildered, left



off for good. I could only replace the box with the usual stumps in order to keep it in good health for further experiment.

I am thoroughly unacquainted with the nature of the phenomena guiding the Woodpecker and with the reason for its bewilderment when confronted with the box. If further experiment should lead me to a logical hypothesis I will give this information in a further article.

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## ABYSSINIAN LOVEBIRDS

By A. CLARENCE (Salisbury, Wilts, England)

It was once said that "to be wise too late is the exactest definition of a fool", and this, I fear, leaves me well in the running. At any rate it is very expensive!

The Abyssinian Lovebird has not a pleasant character, but this is made up for by its handsome appearance. To me it is the most beautiful of the lovebird family—the cock bird particularly. It was a master stroke of Nature to draw a line of black the full length of the wing, and add a scarlet beak and forehead as foil to a viridian green body.

As to character, woe betide any trusting simpleton. Quietly sidling up with easy friendly movement, he will quickly bite through the foot, or leg joint for preference. Even a gentle harmless little Cayenne Rail did not escape the nastiness of a pair I own, and received a bite at the main joint of one of its slender legs. I just missed seeing the assault, but the flowing blood left its trail, and he was soon caught up. It eventually recovered, but will always limp. On another occasion, a second sufficed between a Bullfinch having two legs and one. No wonder a young hen Abyssinian enjoyed scalping its four defenceless brothers and sisters, while still in the nest, and this at a carefully chosen moment.

The Abyssinian seems to prefer sunflower to other seed. It is a fruit-eater, and will eat almost any fruit. It is particularly fond of sweet apples, and failing anything better it will even eat that sour horror so beloved of English cooks—the Bramley Seedling, which not even the wild birds will touch if there is anything else to go for.

When I am obliged to leave my birds to underlings and the mentally deficient, I thread a dozen apples on a wire and hang them so that they are reached from below, hoping thereby to induce the birds to eat the bottom one first. Also a wire of dried figs and another of dates act as a reserve against lack of observation and forgetfulness. Very large seed hoppers with glass fronts and an extra hidden water supply which the birds can see is very essential, and are a relief to one's mind. Abyssinians are particularly partial to sprouting sunflower and oats during the nesting season.



At my old home near Salisbury the Brown Owl is very numerous. These would plane over the aviaries on silent wing and then let out a screech, which has scared the wits out of many a poacher—and myself. It is quite incredible what a shock that screech can be—one's hair does stand on end! This caused the death of one young Abyssinian, while some years ago six young Splendids met with a similar fate, flying in their panic against the far wire. There were nine of them and six were picked up dead in a row at the end of the aviary with broken skulls. They are, of course, noted for their thin skulls. The speed with which these particular parrakeets can fly has to be seen to be believed. On one occasion a cock Splendid escaped. It was faster than the flash of a Kingfisher—and good-bye.

I had hoped that my "Caller-up-in-Chief", a cock Princess of Wales, would lure him back, but he was too far off and the wind unfavourable. The Princess of Wales' penetrating voice steered home many a budgerigar lost for days and once brought back a Meyer's Parrot. This Meyer's cut a round hole in strong half-inch mesh wire, neatly turning over each point so that the exit was smooth and then disappeared for two days into an orchard.

When obliged to leave birds to the care of other people, I find it helpful to them to fix a funnel through the wire so that seed can be poured into its receptacle without their entering the aviary. Particularly useful is this when dealing with Abyssinians, who are shy and wild by nature and very secretive when nesting.

It is well to remember to use soft, loose fitting gloves when handling them, for like bulldogs, when they bite they do not let go.

A few years ago I bought a cock Abyssinian and was lucky to be given a hen. The pair were put into a 20 feet aviary, 12 feet high at the apex. As a protection from the weather they had access to a small conservatory, which was warmed during the winter. At the end of the aviary grew a substantial elder bush, which shrub birds dislike biting, possibly owing to its unpleasant smell when bruised.

Into the apex, and wedged among the branches, was fixed an upright nesting-box, which was made of one-inch wood. It was 15 inches high and 7 inches square and was filled to a depth of 6 inches with a mixture of sawdust and dry earth compressed—dryness being essential to warmth in cold, wet weather. Into this a deep budgerigar nesting bowl of wood was securely embedded. The box was put up in January for the reason that in the winter months a box of smaller and lighter make had been hung in the greenhouse. The Abyssinians slept in the latter and eventually in December had a clutch of eggs, which were fertile, but did not hatch, no doubt due to the hard frosts and to there being insufficient warm material under the eggs. It was obviously not to their liking, and as soon as the box in the elder bush was put up they took possession. It was well



hidden and this appealed to their secretive nature. It was also protected from winds and no rain could get to it. A bundle of hazel saplings stood nearby in a bucket of water. These the birds chewed off in small bits and carried into the nest, though so unobtrusively that no one saw them do it.

The four eggs hatched in due course after a long incubation of about a month, and eventually the young birds were strong on the wing.

The same pair started a third nest in the autumn and all seemed set fair (they seem to breed all the year round). Then I learned a lesson !

A young hen of the first clutch, now about eight months old, entered the nest and killed her four fully-fledged brothers and sisters. The massacre took place no doubt while the parents were feeding in the conservatory. She was covered with blood and thus stood self-convicted.

I transferred her to a small aviary with a six-foot flight, where she met with an unpleasant end, when a Brown Owl drove its long-reaching talons into her body as she slept against the wire.

There is nothing so expensive as experience !

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## FATAL DISEASE IN IMPORTED GOULDIAN FINCHES

By J. P. C. WACHEM (Hilversum, Holland)

Among the seed-eaters the Gouldian Finch is one of the most wonderful. If one, however, sees the great mortality of newly-imported birds, a fancier feels somewhat uneasy at buying them. But being lovers of birds and members of the Avicultural Society (Rules of the Avicultural Society, No. 1 : "... the study of British and foreign birds in freedom and in captivity"), it is our duty to do everything possible to determine the causes of these losses and what can be done to prevent them. Last year I bought a pair of Gouldian Finches out of a very good-looking importation. As this pair was showing symptoms of disease, the price was very low. My opinion was, that had the dealer kept these birds they would have died in a couple of days. I did everything that could be done to keep them alive. Though my home is centrally heated, I placed an electric lamp in the cage and I put honey and some drops of wine in their water to stimulate the working of the heart. The food was a mixture of all kinds of seeds (ripe and germinated), combined with cod-liver oil, milk powder, etc. The result was astonishing, in a few weeks the birds recovered



completely. As they showed signs of broodiness, I placed a small box and nesting materials in the cage, with the result that the hen laid four eggs. Only birdlovers can understand my happiness at this reward of all my trouble. Alas, I had shouted too soon. The same day that the hen laid her last egg in the nest, the cock became ill and died in a few days. There was no one particular symptom. One or two days after the death of the cock, as the female also became ill and showed all the signs of following the cock, I decided to try to cure her by giving aureomycin. I had read an item in *Die gefiederte Welt* in which the author told of his wonderful cures of birds in a hopeless condition, by using aureomycin. The dose is 1/1000 gram per 10 gram body weight, three times a day, during two days. I had ordered very small pills to be made, each containing 1/1000 gram, and during two days I gave these pills (totalling six). The result was astonishing, the second day the bird showed signs of recovery. At this moment the Gouldian is still alive and my friend and I are trying to mate her with his cock. The eggs we put in the nest of a pair of fawn Bengalese ; they hatched, but the Bengalese didn't feed them and after one day this hope also belonged to the past.

One or two days before my cock died, a cock belonging to my friend also died. This cock was of the same importation, but was in first class condition. With the aid of one of my veterinary friends, I sent both birds to the veterinary school of the University for post-mortem examination. A most thorough examination was carried out, even blood cultures were made. The result was negative. It was very remarkable that the organs of my bird seemed to be in a better condition than those of the (? healthy) bird of my friend. There is a possibility that an unknown virus caused the death of the birds. But in this case the investigator must have some idea where to look for the virus in order to prepare the right culture medium. I have observed the wonderful action of aureomycin in the treatment of a Parson's Finch in a hopeless condition, but I quite understand that it is impossible to cure a bird suffering from avitaminosis by this treatment, for in such cases only the correct vitamin is efficacious. I believe, however, that in severe cases of illness of unknown cause, aureomycin is worth trying. But in the case of the Gouldians it is obviously more satisfactory to determine the cause of the illness and losses.

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VISIT OF THE AVICULTURAL SOCIETY TO THE  
BIRD COLLECTIONS AT THE ZOOLOGICAL  
GARDENS OF ANTWERP AND ROTTERDAM

By D. H. S. RISDON (Dudley, Worcs., England)

Members foregathered at Liverpool Street Station on Friday evening the 3rd June, 1955. Although the railway strike was on, fortunately our train was running and we caught the night boat to the Hook of Holland, entraining there for Antwerp, where we eventually arrived during the morning. We were met at the station by the Director of the Antwerp Zoo and his wife, Monsieur and Madame Van den bergh, and conducted to the Zoological Gardens where a most cordial welcome awaited us from the President, Monsieur Louis Diercxsens. Replying to his speech of welcome, Miss Phyllis Barclay-Smith said what great pleasure it gave us all to be present and how honoured we felt to be the guests of the Société Royale de Zoologie d'Anvers.

After lunch we toured the Zoo, Monsieur Van den bergh and Monsieur Carpentier, the Curator of Birds, acting as our guides. Naturally, our first visit was to the new Bird House and we were much impressed by this modern method of displaying birds. No wire is to be seen, the birds being confined behind plate glass windows, each cage or enclosure being artistically decorated with natural perches and growing plants. The cages are lit from the top by daylight, the visitors themselves being in a darkened hall lit only by the light from the cages. The effect is quite remarkable and undoubtedly brings out the full beauty and colouring of the birds. For the first time I personally saw the operation of the principle of confining birds by light only. One corridor in this house is completely blacked out, the cages only being brilliantly lit by artificial means and without any sort of barrier between the birds and the visitor. The darkened corridor prevents the birds from leaving their lighted cages. Whilst I am not quite sure whether this is good aviculture, it is certainly a most spectacular method of displaying birds and the specimens we saw appeared in good condition.

Exhibits which stamped themselves on my memory in this house were a beautiful Quetzal, the first live one I have ever seen, and a pair of Red Birds of Paradise in the most perfect condition. The house included a fine collection of Macaws and Cockatoos on stands and I particularly noticed a pair of White-backed Piping Crows, a species I have not seen since pre-war days. The larger softbills were well represented including Toucans, Jay-Thrushes, Touracos, and Glossy Starlings. There were some nice Humming Birds and Sunbirds and I noticed several species of Conure which I had not seen before.



One of the features I liked best about Antwerp Zoo was the birds which were allowed loose about the grounds. We saw Crowned and Demoiselle Cranes and numerous waterfowl walking unconcernedly about the lawns, often crossing the pathways frequented by visitors. A group of some twenty Flamingoes occupied a shallow pond just inside the main entrance, surrounded by nothing more than a lawn and a stone wall about 12 inches high. I was assured that they never leave this enclosure.

The outdoor aviaries were, for the most part, spacious and well planted and contained a huge variety of birds. A particularly spectacular aviary must have measured well over 100 feet long by 40 feet wide and 30 feet high. It contained a mixed collection of Egrets, Gulls, Storks, Gallinules, and even a pair of Occipital Blue Pies and some Jackdaws. I happened to be passing just at feeding time and the movement and colour in this aviary were really wonderful.

Another method of exhibiting the larger birds which impressed me was in a series of outdoor enclosures separated from the public only by a moat. One could thus see such species as Scarlet Ibis, Marabou Storks, and other wading birds without any obstruction to the view. To add to this attraction the moat itself was occupied by various species of duck. The birds were, of course, pinioned or clipped winged, but even so, I was surprised that they did not attempt to cross the moat, which was scarcely more than about six feet in width. The reason is, evidently, that once the birds have become settled in their enclosures they do not try to escape.

I think, without doubt, we were all very much impressed with the remarkably wide and varied bird collection at Antwerp. All the major groups were represented and the excellent condition of the birds spoke volumes for the care and attention lavished on them by Monsieur Carpentier, the Curator of Birds. Our thanks are due to him for all the time he spent showing us round and his kindness and patience in answering the numerous questions we put to him.

On Saturday afternoon by the kind invitation of Monsieur Willy Friling we visited his very fine collection of foreign birds and waterfowl situated in the beautiful grounds of his estate at Braschaat. Monsieur Friling and his friend Colonel John Dufour, who, I gather is partly responsible for the collection, personally conducted us round the grounds. First we visited the aviaries. The birds have separate summer and winter quarters. In summer they inhabit outdoor aviaries, provided only with overhead shelter; in winter they are transferred to a huge indoor birdroom which is most efficiently fitted out with spacious cages. I must say there seems a lot to be said for this form of aviculture. The birds don't require much shelter in the summer, except from wind and rain, and in the winter they are probably better off anyway inside, thanks to our inhospitable northern climate.



Moreover, it is far more pleasant and comfortable from the attendant's point of view.

I was struck with the attractive way in which each aviary was planted and decorated. Overhead shelters ran along the back walls which were painted white, the floor being covered with clean silver sand. The front and open part of the flights were turfed and planted. The whole effect was light and pleasant and the birds showed up extremely well. Monsieur Friling maintains a large collection in beautiful condition. The number of species is far too great to mention but the highlights I remember, were Bleeding Heart and Bronze-winged Pigeons, Glossy Starlings, Occipital Blue Pies, Jay-Thrushes, and one large aviary which was given over to waders, including Ruffs, Curlews, and Plover. There were some nice parakeets, mainly of the Broadtail family, housed in a range of aviaries on their own and one enclosure contained an interesting collection of different species of Mynah.

After the aviaries we saw the waterfowl collection. These inhabit a beautiful lake in the grounds and have free range over acres of beautifully kept lawns and grassland. I remember seeing Cranes dancing in the distance and was surprised to see Flamingoes walking about the lawns quite a distance away from the water. Many species of geese and swans were to be seen. The smaller ducks were kept in a stream which eventually flowed into the lake. All the well-known species were represented and I particularly noticed a fine pair of Baikal Teal which I think were the envy of more than one member of our party.

Afterwards we were entertained to tea by Monsieur Friling and his daughter and son-in-law, Mr. and Mrs. Martin, who also acted as hosts. Unfortunately it rained during the whole of our visit ; it was, in fact, the only wet day we had, but the hospitality and kindness of Monsieur Friling and his family and his truly wonderful collection of birds made us forget the weather and we spent a most interesting and enjoyable afternoon.

On Sunday we visited the "Snepkensvijver" Bird Reserve at Lichtaart. This is a large stretch of mixed marsh and woodland and ideal for its purpose, being just the sort of country which most birds love. In the marsh we saw a breeding colony of Black-headed Gulls and our visit could not have been at a more interesting time, as newly hatched and partly grown chicks could be seen everywhere among the tufts of grass growing out of the water. Curlews and Lapwings were abundant and I have never before seen so many Black-tailed Godwits. A most interesting fact I did not know before was the ability of the latter to perch in trees. Several times we saw a bird which had been disturbed from its nest alight in the top of a low growing tree, giving its alarm call—remarkably like that of a Peewit—until we had passed





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[Sir Crawford McCullagh

MONSIEUR LOUIS DIERCXSENS  
President, Société Royale de Zoologie d'Anvers.

To face p. 178]





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*[Sir Craeford McCullagh*

MR. W. VAN RESEMA  
Director, Dierenpark "Blijdorp", Rotterdam.

*[To face p. 179*



out of the danger zone. We then followed a path through the woods and undoubtedly the highlight of the afternoon was seeing a hen Golden Oriole on her nest slung from the end of a bough in an oak tree. She never left the nest the whole time we were there and with the aid of field glasses we had an exceedingly good view of her. Later we saw a cock bird, but as it was in silhouette against the sky, it was not possible to see its beautiful colouring although we did hear part of its song.

Other birds I saw for the first time wild were Great Reed-Warblers and White-spotted Blue-throats and we were also shown a Cuckoo's egg in a Blackbird's nest—surely an unusual situation !

Monsieur J. Cuypers, who is the Honorary Warden for this Reserve, kindly gave up the whole of the afternoon to conducting us round. His kindness in answering our questions and showing us all the things which we would never have seen by ourselves, made it far more interesting than our visit would otherwise have been.

On Monday we went by train to Rotterdam where we were met at the station by the Director of the Rotterdam Zoo, Mr. van Resema, who took us straight along to the Zoo. I was impressed again by the general layout of the Gardens. Rotterdam is an up-to-date Zoo, having been largely built, I believe, since the war, consequently it incorporates the modern idea of showing animals and birds in as natural a setting as possible with the minimum of fencing. The general idea is to confine the exhibits by means of ditches and low walls over which the visitor has an uninterrupted view.

There is a remarkably fine collection of Cranes and waterfowl here—regular flocks of them—and how much better they look when kept thus, wandering free in large paddocks, than when seen in ones and twos. Rotterdam Zoo has a fine breeding record and we were not surprised when we saw the waterfowl breeding establishment. This consists of a long range of really extensive pens with a canal running right through the lot of them. Each pen, or enclosure, houses one pair of ducks or geese, with the result that the maximum number of eggs and young are obtained. The eggs are collected and hatched in an incubator and the ducklings are reared in artificial brooders.

I envied Rotterdam Zoo its plentiful water supply from the canals which meander through the grounds.

Finally, we were taken to the tropical Birdhouse. As a Zoo man I had already been thrilled to see several species of mammal which I had never seen before alive, but I was certainly unprepared for the splendour and size of this house. Going in was just like entering a tropical jungle and it is so extensive and so carefully laid out that the visitor appears to wander indefinitely along pathways overhung with every conceivable kind of tropical plant life. Situated here and there, and cunningly concealed among the vegetation, are the aviaries con-



taining a magnificent show of birds. The condition of the exhibits was marvellous. The floors of the cages were covered with silver sand which seemed spotlessly clean. In fact, the whole atmosphere of the place was of an extremely well-kept tropical garden.

On show were such rarities as Cock-of-the-Rock, Birds of Paradise, Roul-roul Partridges, Crowned Pigeons, and some beautiful little Crocodile Birds which took my fancy. This species is about the size of a Golden Plover and similar in shape but most strikingly marked in black, white, French-grey, and cinnamon.

The weather was really beautiful throughout the whole of Monday and it was so warm in the evening that we actually sat down to dinner out of doors with Mr. van Resema as our most entertaining and genial host. This dinner was a wonderful ending to a wonderful week-end, as that night we had to catch the boat back to England.

Looking back, it seems remarkable that we crowded so much into three short days and I think it is here fitting to pay tribute and express our grateful thanks to Monsieur and Madame Diercxsens, Monsieur and Madame Van den bergh, Monsieur Friling, and Mr. van Resema for all that they did to make our visit such an unqualified success. I can only describe their hospitality as lavish and their kindness unbounded. They did everything they could to make us feel welcome and it was entirely due to their efforts that we had such a wonderful time. Personally it was my first visit either to Antwerp or Rotterdam and if this is an example of Belgian and Dutch hospitality, I am certainly looking forward to the next.

One final tribute I would like to pay to our Editor, Miss Phyllis Barclay-Smith, who was responsible for organizing the whole trip. It was thanks to her that everything went like clockwork. She looked after us extremely well and I am afraid we must have been a nightmare to her at times ! Personally, I hate being organized, but Miss Barclay-Smith did it so well and so pleasantly that we were not even aware of it. It is no easy matter to get about twenty wayward aviculturists, each with a mind of his own, to fall into line with a schedule and be on time to catch 'buses and trains, but she never lost a single member of her flock once.

\* \* \*



## STUDIES ON GREAT CRESTED GREBES

By K. E. L. SIMMONS (Tilehurst, Reading, England)

Illustrated by Robert Gillmor

*(Continued from page 146)*

## 4. THE SIGNIFICANCE OF COURTSHIP AND RELATED BEHAVIOUR

*By a combination of particular positions of ruff, ears, and neck, and sometimes wings and body too, the birds can assume a number of characteristic, and often-recurring attitudes, which are the raw materials, so to speak, of all the habits of courtship. Let us . . . define courtship as a series of actions based immediately or remotely upon sexual excitement, and, to make ourselves clear, we must add that sexual excitement is not merely sexual desire, but that whole emotional state into which a member of one sex may be thrown by a member of the other. What is the good of all these divings and posturings . . . ? To what end are colours and structures developed solely to be used in them, and what return is got for the time and energy spent in carrying them out?*

Huxley, 1914: 495, 527, and 516.

Some millions of words, of greatly varying quality, have been written on bird "courtship" since the early observations of such sound workers as Howard, Huxley and Selous gave impetus to the subject in the first two decades of this century. Huxley's notable paper on the Great Crested Grebe was one of the very first to raise the standards and has remained a most important contribution ever since. Until recent years, however, a great deal of the subsequent work, both in this country and in the United States, has been mainly descriptive. Now we are beginning—if only *just* beginning—to acquire a deeper understanding of the mating behaviour of birds, thanks mainly to the disciplined methods of observation and analysis that the science of comparative-ethology has given us.

The present section re-examines and extends in general terms the information on the courtship of the grebe, against the background of the modern advances in the objective study of bird behaviour. I have already made brief mention of my views on the meaning of grebe courtship in previous sections (pp. 10, 145–6), and here I would like to deal with the "facts and fancies" of such behaviour in more detail, hastening to add that I trust the "fancies" will not prove to be too fanciful and to assure the reader that they do have a solid foundation in fact. It is as well, therefore, to examine some indisputable facts about the subject first of all. Anyone merely describing grebe courtship at the present time does so in a certain air of anti-climax, for it is now well known, thanks to Huxley, and his own paper should be read in full to get the thrill of original discovery at first hand. I do



hope, however, that the new theories on the significance of grebe courtship presented later, as well as the many new facts, will fascinate the reader as much as they have the writer.

I have used the term "courtship" only for those "sexual" displays and ceremonies which are not directly to do with coition; after all we use the word in the same sense when referring to human affairs of a similar nature. The joint ceremonies of male and female are the most conspicuous features of grebe courtship. By "ceremonies," I mean the same as Huxley did by "habits of courtship": fixed, conventional sets of displays. There are six main displays (Huxley's "attitudes") which are common to both sexes, and combinations of these make up the four main ceremonies. Each display will be described briefly immediately below, and the ceremonies afterwards. Huxley's account was so detailed that I have included only those descriptive facts necessary for interest, expansion, and subsequent discussion. These have been taken from my own notes mainly, but I have directly quoted relevant passages from Huxley's paper in certain places.

### *The Courtship Displays*

#### *Head-shaking Display*

When head-shaking fully the grebe alternates between two types of head movement. The main one, a vigorous sideways wagging "some four or five times in quick succession, like a man nodding emphatic dissent", is followed by a much slower swing of greater amplitude, "with a seemingly vague and enquiring action, as if the bird were searching the horizon for it knew not what." The bill usually points just slightly downwards at its normal angle, but sometimes, especially at the beginning of an intense display, is tucked well down, and on other occasions is elevated at about 35 degrees. The ornamental feathers of the head are raised characteristically during sequences of these movements: the crest is elevated vertically and sprayed out rather raggedly; the tippets are well spread so that they stand away from the head and frame the white face patch in chestnut and black. The neck, stretched fully upright, looks surprisingly thin and long for most of its length, though there is a noticeable thickening where the shoulders meet it. The whole attitude of neck resembles a small white-wine bottle with its disproportionally elongated neck and a fancy cork. When in this head-shaking posture, the grebe shows to full advantage all its conspicuous frontal features. Apart from the head feathers, more white now appears than normally, from the whole length of the neck and from the upper breast which has been brought out of the water by the stretching of the neck. A last, rather incongruous, feature of the posture is that the tiny apologetic "tail" is cocked right up, although it must be invisible from the front.



Normally, head-shaking display only appears at full intensity when performed in a mutual ceremony with the mate, or potential mate. In the case of flirtations (pp. 133-4), however, the relationship between the birds may be casual. The display may also occur in other, "non-ceremonial" circumstances, usually then at low intensity, without the full posture and with only relatively slight head movement. For instance, an unresponsive partner may shake its head at its mate when the latter is soliciting on the nest, and one-sided display may be seen at nest-relief. As previously described on page 141, a bird in the upright pre-attack posture may do head-shaking movements when about to withdraw.

#### *Habit-preening Display*

"This action had obviously something to do with preening but had an extraordinary look, as if of a stereotyped and meaningless relic." In habit-preening, the grebe dips its head backwards and downwards to one side, in a smooth, very precise movement, and raises a few of the feathers of one of the folded wings on the back with its closed bill. Then it brings the head back to its former position, usually the upright, head-shaking one. The habit-preening display is, in fact, very often associated with head-shaking. It is obviously an extreme form of displacement-preening which is more complete than this very symbolic action.

#### *Weed-trick Display*

This is initiated by a dive to the bed where the grebe gathers a bill-full of aquatic weed. Surfacing, it swims towards the mate with the bunch of weed dangling, tippets fully expanded "to the extreme elliptical, bringing down the ears (i.e. the crest) meanwhile from the vertical to the lateral position, so that the whole crest (that is the tippets and crest combined) now appeared like a large chestnut-and-black Elizabethan ruff". Head-shaking display may follow, but the penguin-dance is the usual sequel.

#### *Penguin-dance Display*

Holding the weed, the grebe swims towards its mate, and when a few feet away rears up out of the water suddenly so that most of its body stands nearly vertically above the surface, with the legs paddling powerfully out of sight to keep the bird up. Normally the partner has done the same and a mutual ceremony results.

#### *Ghostly-penguin Display*

This display, which is certainly as strange as the penguin-dance, and even more bizarre, is prefaced by a very shallow dive towards the mate. When the approaching bird reaches the latter or, as often happens, overshoots it, a slow emergence is made from the depths.



"He seemed to grow out of the water. First his head, the ruff nearly circular, the bill pointing down along the neck in a stiff and peculiar manner; then the neck, quite straight and vertical; then the body, straight and vertical too; until finally the whole bird, save for a few inches, was standing erect in the water, and reminding me of nothing so much as the hypnotized phantom of a rather slender penguin." Huxley named the dive and the emergence, the "ghost-dive"; as it is convenient to have a special name for the peculiar emergence itself, I have adopted his incidental one, ghostly-penguin, for it.

### *Cat-display*

This, the "cat-attitude" of Huxley, has already been briefly outlined and figured on page 144 in its connection with hostilities. "In this position, the beautiful white bar formed by the marginal wing-coverts, along the anterior margin of the wing, and the broad white blaze formed by the secondaries, which are quite invisible when the wings are closed, shone out vividly. The gap between the wings was filled by the head; this from the front somewhat resembled an old-fashioned picture of the sun, with the ruff rayed out considerably all round, and the ears were erected laterally so as to fit on the top of the ruff on either side. Below the head shone the white of the puffed-out breast. The bird's whole appearance was wonderfully striking, and as unlike as possible to that of its everyday self." The cat-display is a regular item of courtship between the mated male and female and figures prominently in two of the ceremonies. Like head-shaking and habit-preening, however, and unlike the weed-trick, penguin-dance, and ghostly-penguin displays, the cat-display may appear outside the context of the formal courtship ceremonies. We have already seen its use by unmated females when threatened, and these birds often adopt it when merely approached by males that have answered their "advertising call" (see later below).

### *The Courtship Ceremonies*

Of the four main ceremonies, two (Head-shaking and Penguin-dance Ceremonies) are strictly mutual with the male and females playing identical roles. The remaining two (Discovery- and Display-Ceremonies) are reciprocal, with the roles of each sex different but interchangeable. None of the ceremonies are preludes to coition, which is preceded by quite a different sequence of activities at the nest-platform.

### *The Head-shaking Ceremony*

"The bout of shaking is not only the commonest form of courtship-action, but it also forms part of all the other more elaborate forms. It always ends a series of actions and often begins them as well." Thus



it is the normal prelude to both the Penguin-dance and Display-Ceremonies, and the normal sequel to both these and the Discovery-Ceremony as well.

A typical, full intensity, Head-shaking Ceremony proceeds something like this. If separated, the male and female swim towards each other, sometimes in a version of the forward-display, perhaps giving the barking call, as described on pages 138-9. The mated grebes are more inclined to approach each other thus, prior to courtship, in the early days following the initiation of their cycle. As they near one another, however, they gradually raise their heads until, when they meet, they are in the upright head-shaking posture, just described above, with tippets and crest displayed. During the last stages of the approach and at the beginning of the resulting ceremony, the grebes utter a characteristic, fast ticking-call like small stones being glanced together, "a rapid alternation of two sounds on two notes: a consonantal sound—*k'p* or *t'c*—on the low note, and an indefinite vowel sound about a tone higher." The barking (threat) call may blend into this ticking one. If the two birds are already close together, they merely start ticking, rear up their heads in display and link up without any more elaborate approach behaviour. Now facing, perhaps only a few inches apart, male and female start the ceremony proper. Initially the bills may be sharply lowered at an acute angle to the neck (which exaggerates the appearance of the tippets by making more of their surface visible to the mate), especially, as Huxley also notes, after aggressive dealings with other grebes. Indeed, the display bout may not progress beyond this if the encounter is not yet fully over. Soon, however, the birds relax their heads into the more normal, less strained, shaking position and the usual alternation of waggling and swaying follows. The movements of the two birds may not synchronize in any way—"the violent shakings of the two neither coincided nor alternated, but each shook and swung without any apparent reference to the other's rhythm." However, sometimes I have recorded a definite rhythmic form of head-shaking: one bird takes the lead and dictates the pace. It waggles rapidly, often with the head pointing upwards, and its mate does likewise, and so on.

Huxley found that a typical bout of head-shaking lasted for about ten to a dozen shakes between both birds, but recorded one sequence in which the two birds gave 84 shakes. After a variable number of fast and slow head movements, first one and then the other grebe may start to habit-preen, perhaps incompletely at first with but a slight backward turn of the head. Then this display may take command of the ceremony. The birds waggle, sway, and dip back to flick up the wing feathers, or waggle and preen without swaying the head in between. Once habit-preening has started the bout never regains its



former tempo again and either ends there and then or eventually fades away.

“The bouts seem, to the casual onlooker, to start themselves—in reality, I think, each bird excites the other. One bird gently shakes its head under the force of rising emotional tension; the other bird had not quite got to that stage, but the sight of its mate shaking acts as a stimulus, and it too pricks up its head a little and gives a shake.



Mutual Head-shaking Ceremony—the sway of the head between the wagging movements.

This reacts on the first bird, and so the excitement is mutually increased and the process fulfils itself. . . .” Many ceremonies start in this way from previous inactivity. Often, too, and especially if male and female are not side-by-side, either of them may more noticeably initiate the bout by approaching its partner and ticking, the two birds working up to a good intensity as they near and assume the display posture. In the events that follow each grebe’s behaviour acts to intensify and keep up that of its mate. There can be no complete Head-shaking Ceremony (or any other) without the equal participation of male and female. Often, instead of starting from scratch, as it were, mutual head-shaking is initiated by one of the other ceremonies, as will be described below. I have termed all this kind of head-shaking, which has its origin only in the behaviour of the individual pair itself as *spontaneous*. Much is also *induced*, however, by outside influences. The sight and sound of grebes engaged in a conspicuous Head-shaking Ceremony will often stimulate another



pair to do the same. A characteristic scene in the open water is the simultaneous performance of several pairs, dotted here and there within view of one another. Territorial neighbours may similarly stimulate each other, and Head-shaking Ceremonies are further frequently induced by aggressive encounters. For example, after threatening other birds, or after actively driving out intruders, the territory-owning pair may link up and display, often very vigorously. Birds actually still engaged in hostilities with others, may intermittently join up with the mate and head-shake, although usually such bouts are broken-off in their early stages as the enemy is re-engaged. Sometimes a pair of grebes may head-shake on the sight of intruders instead of going to deal with them. After the abrupt, aggressive end to many a flirtation, the truly mated birds head-shake together.

The forward-display is not an invariable approach attitude prior to head-shaking. It may be entirely left out or merely indicated as male and female sail towards one another with the head just held forward and the neck tucked back in the shoulders. Sometimes the low intensity threat-call (gang-gang-gang) may be heard. In any case, the forward display is never given at absolute intensity to the mate (with rucked-up feathers on the back); it is usually only made at the start of the approach, when male and female are several yards apart, and is only regular during the early days of the pair's display relationship. It is also very likely to occur to the mate after an encounter with rivals and prior to induced display.

There is much intensity variation in the Head-shaking Ceremony itself. The amount of habit-preening ranges from nil upwards to almost a hundred per cent frequency. "The more excitement, the less preening, seems to be the rule; long bouts may degenerate into practically undiluted preening, the head simply being brought more or less up, but not shaken between the 'preens'." There is every degree of completeness in the posture and head movements themselves, from the full ritual already described right down to a few lazy-looking shakes of the head with no stretching of the neck (or even with the head tucked away in the pork-pie attitude!), and without any spreading of tippets and crest at all. While some of this low intensity behaviour is due at times to a joint indifference, much of it results from a lack of response in one of the partners. Often, on the other hand, enthusiasm from one spreads to the other. Thus, sometimes one grebe starts to display weakly but, getting no reaction at all from the other, stops doing so; on other occasions, as we saw above, the second bird is stimulated to reply and then the bout mounts in excitement.

A bout of head-shaking may end in many ways. One or both of the birds may move away, discarding the display posture quite suddenly or drift off while gradually relaxing from their upright position. If



no further display is to follow, the vestigial habit-preening may turn into more complete preening. Often the birds rise in the water and body-shake (p. 101). Any routine activity is likely to occur too, or the nest may be visited and built up. Often, however, another form of courtship ceremony may follow on directly, or very soon afterwards and more head-shaking as well. Once a very excited sequence of preening and oiling actions interspersed bouts of head-shaking, with much splashing of water. A very much more frequent sequel to an intense Head-shaking Ceremony which has contained little if any habit-preening, is the joint *swimming-together* of the paired grebes, side-



Pair of grebes *swimming-together* after an intense bout of head-shaking (from a photograph by W. N. Charles).

by-side as if going to a definite place. If they have not settled down at a nest-site already, this swimming may soon be superseded by some other activity, the birds going nowhere in particular. But if they have reached the soliciting and copulatory stages of their cycle, it is obvious that this purposive swimming is really directed towards the nest site. When this is reached the more intimate sexual activities may occur there. Other patterns which may less regularly succeed head-shaking include the following. Huxley recorded that one pair "almost always went into a formal back to back, or rather tail to tail, attitude after each bout of shaking", and, on one occasion, the two birds of another pair dived suddenly away from each other. I have seen a pair, when no other grebes were near to frighten it, in which the male and female turned away after display and swam side-by-side with their tippets tightly closed in the furtive-posture. At another time, the female of an isolated pair backed away from her mate with her head withdrawn and bill open, in the pre-attack posture in fact.

Sometimes, a Head-shaking Ceremony of sorts occurs at the nest, with one bird on the platform itself and the other in the water alongside. This is not, however, a pre-copulatory affair. What has happened is that the soliciting of the grebe on the nest—male or female it may be—has not had the desired effect on the one in the water. The latter has poked about the base of the nest, perhaps added weed and made spasmodic head-shaking movements to which the other has finally responded and the bout received momentum from



their joint efforts. On the other hand, a rather special, post-copulatory Head-shaking Ceremony nearly always occurs; this has not apparently been previously described in the literature and will be dealt with in section 5.

#### *The Penguin-dance Ceremony*

This ceremony, like the Head-shaking one, is a strictly mutual affair, and is the least frequently performed of all the grebe's rituals. Huxley saw the Penguin-dance only four times and Selous but once. I have not seen it much more than a dozen times over seven seasons, although observing hundreds of head-shaking bouts in the same period. I do believe, however, that the behaviour is not quite so rare as these records might suggest.



Mutual Penguin-dance Ceremony (adapted from a figure in Huxley's paper).

The Penguin-dance Ceremony, made up of the weed-trick and penguin-dance displays, is the most elaborate of all the grebe's courtship. It seems always to be initiated by a very intense bout of head-shaking, in which habit-preening is not frequent or, probably more usually, not performed at all. The joint diving which heralds the weed-trick follows and, on surfacing, the two birds swim to meet and rear up together. "Coming up with the impetus of their motion, the two birds came actually to touch each other with their breasts. From the common fulcrum thus formed, bodies and neck alike sloped slightly



back—the birds would have fallen forwards had each not thus supported the other. Only the very tip of the body was in the water. . . .” In such a breath-taking union they sway together for a few moments, still holding the weed, and start to head-shake. Still waggling their heads, the grebes sink down slowly from the upright position and another intense Head-shaking Ceremony occurs. In the meantime the weed has disappeared, probably always merely dropped as the couple subsides, though Huxley thought some of it might be eaten.

Sometimes the mutual weed-trick display is followed directly by head-shaking, without the intervening penguin-dancing. Once (27th January, 1951), a female dived, approached her mate with the weed in her bill only to find him preparing for a good head-shaking bout—raising his head, spreading his tippets and crest, and loudly ticking. Ignoring the usual procedure in such cases, which demands her to head-shake also, she reared up in penguin-dance display against him. The male moved back slightly and the female lost her support, a regular Head-shaking Ceremony following. A somewhat similar and unusual sequence was seen on 22nd February, 1953. A pair was adding weed to the platform when some intruding grebes came to view. The male left the *Typha* clump, swam, towards them, and then turned to head-shake with his mate. She meanwhile had left also, still holding the weed intended for the nest, and reared up in front of her mate in the penguin-dance display, then dropped the weed and participated in the Head-shaking Ceremony. In both these cases the one-sided penguin-dancing was unusual. Also, unlike head-shaking, the penguin-dance is not often induced by “outside” influences.

#### *The Discovery-Ceremony*

The Discovery-Ceremony is a regular form of courtship occurring more frequently than the Penguin-dance but not nearly so often as Head-shaking. It takes this reciprocal form. One of the pair, it may be the male or the female, dives towards the other in a special way: its underwater course lies only just under the surface and is marked by a narrow but quite noticeable ripple as the grebe progresses. The second bird, some yards away, on seeing the other dive goes into the cat-display and watches the ripple intently as it approaches. The submerged bird usually passes just beyond the one on the surface, which turns about, still keeping the tell-tale disturbance on the water in sight, and comes out of the water in the ghostly-penguin display. “As it grew it gradually revolved on its long axis until at its fullest height it came to face the hen. Though all this was done in an unhurried and uniform motion, yet of course, it took very little time. Then from his stiff, erect position he sank slowly to the surface; the hen meanwhile put down her wings and raised her neck; and the pair settled down to a bout of head-shaking”, which is the almost invariable



sequel. Although in this quotation from Huxley it was the male that performed the whole ghost-dive, and the female the cat-display, I would emphasize that these two roles are definitely interchangeable, a fact about which Huxley was uncertain. On the other hand in hostile and other situations involving unpaired grebes in which the cat-display has appeared, I have so far only recorded it from females. But the male may perform it in a Discovery-Ceremony.



The reciprocal Discovery-Ceremony—the ghostly-penguin and the cat-display.

Huxley's observations showed that the Discovery-Ceremony most often occurs when a mated male and female link up after being *totally* separated. One of them "searches" for the other (in the forward-display, uttering the barking call) which, when discovered, dives and initiates the ritual. There are, however, not infrequent departures from this pattern. Firstly, the couple need not be out of touch altogether but may also at times be separated by as little as a few yards and in full view of one another. Then, in either case, total or partial separation, the ceremony may be initiated by the diving of either the "searcher" or the "discovered". Thirdly, the forward-display approach, which is no more a regular feature of this ritual than any other, may be present in all intensities from quite high to nil. Also, as Huxley himself notes, the ceremony may be set-off, not by the diving bird, but by one of the pair first assuming the cat-attitude. Occasionally, too, both may display thus before one of them dives.



*The Display-Ceremony*

This not very elaborate ceremony, on grebe standards anyway, is about as common as the last one. It can be described in relatively few words. During a bout of mutual head-shaking either of the birds, male or female, may quite suddenly break off, turn away and half-fly, half-patter across the water for several yards. When it settles it assumes the cat-display, often a very complete one indeed, and revolves to face the mate which usually swims up to meet it. Another Head-shaking Ceremony follows in which habit-preening often figures prominently. Sometimes the first grebe will merely swim back and rejoin the mate after flying away, without going into the "cat". Occasionally the other will dash away in turn after the first Display-Ceremony and initiate a second.

*A Record from Field-notes*

The following field-notes on an actual sequence of observations were made between 14.10 and 16.10 on 27th January, 1951, and give an interesting first-hand example of how the displays and ceremonies take place in nature. They give some idea, for instance, how frequent and varied courtship can be on occasions. Pair A51 were the grebes concerned mainly: they had established themselves in the large Type B territory in the breeding-pool (see p. 136) by 20th January and between that date and the day of the present watching had laid the foundations of a nest-platform. The territories of two other pairs (E51 and B51) joined partly on to A's at two points. Head-shaking is continually referred to below, so I have used the abbreviation "H.S." for it, and also the conventional symbols for male (♂) and female (♀).

When observations began the two Pair A birds were just finishing a bout of H.S. Afterwards, they moved to the edge of the territory and for the next 10 minutes or so called aggressively (etc.) out of sight at a single member of Pair B. ♂ and ♀ became separated by several yards meanwhile, and a Discovery-Ceremony followed (14.20) as they came back to view, with the ♂ in the cat-display and the ♀ performing the ghost-dive. After the rather incomplete H.S. Ceremony that ensued, both grebes once more moved out of sight between the islands, with their necks still stretched (14.23). A minute later the ♂ returned, followed by the ♀; the two linked up and went into mutual H.S. which the ♀ initiated but the ♂ terminated. The habit-preening of the ceremony was done by the ♀ mainly. The pair separated again and went behind the islands. At 14.30 the ♂ reappeared, swimming in the forward display and barking. The ♀ too came in sight in the same posture and then dived, slipping smoothly under the water. At this the ♂ again went into the "cat", his mate emerging on course and diving again. A second Discovery-Ceremony took place, followed by



H.S. Two more bouts occurred within the next 5 minutes. At 14.38 the ♂ swam threateningly to the border of the territory. The ♀ came along behind him, also in the forward-display, then dived and came up in front of her mate and they H.S. briefly. Both moved out of sight, presumably to deal with a third grebe. Soon after another H.S. Ceremony occurred and when it ended the ♂ dived. The ♀ went into the cat-display but when her mate emerged he was not in the ghostly-penguin, and a normal bout of H.S. took place.

This was at 14.45 and observation on these grebes ceased until 15.25 while I counted the total number of grebes present at Burghfield that day. When watching started again, Pair A was once more H.S., following this up with a Display-Ceremony. The ♀ was the one to turn and patter away. In the ensuing bout there was little true H.S. but very much habit-preening. By 15.35 the ♀ at last visited the *Salix* clump containing the nest-platform, but the ♂ was in another clump several yards away. Both barked in duet briefly before the ♀ left her cover, swam towards the ♂ and dived. He cat-displayed and another Discovery-Ceremony occurred, succeeded by a very long and intense H.S. bout of some 2 minutes' duration. Then the ♂ led the way to the more open part of the territory where yet another H.S. Ceremony followed. The couple moved out of view for a minute or two and after that there was a further bout of H.S., the birds swimming together subsequently to the clump holding the nest. More H.S. occurred and then the ♀ dived, came up with weed which she soon dropped and merely joined the ♂ to H.S. briefly. Within the next 3 minutes she added three loads of material to the nest and the ♂ poked at it once. They went away at 15.51 with the ♂ in the lead and had a mild encounter with an intruding grebe, an induced H.S. Ceremony resulting. The ♀ swam away from her mate and then turned and partially cat-displayed at him (mild Display-Ceremony). He also started to posture in the same way but changed his mind and folded away his wings. Upon this the ♀ ghost-dived and a typical Discovery-Ceremony took place, followed by a long H.S. bout. Soon after, at 16.01, both grebes dived, emerged from the depths, approached each other in weed-trick display and capped it all with a fine penguin-dance. After the inevitable H.S., the pair turned away towards their platform, the ♀ arriving there first. The ♂ then dived and another Discovery-Ceremony followed, with the ♀ taking the "cat" role this time, and yet more H.S. A "mixed" ceremony occurred soon afterwards with the ♀ doing a weed-trick display and then a full penguin-dance against her mate who was in the H.S. posture. The pair briefly separated and was engaged in H.S. when I left the pool a few minutes later.

In 80 minutes of repeated courtship the score was: H.S. Ceremonies, at least 22 (some may have been missed behind the islands); Dis-



covery-Ceremonies, 5 complete ones and one incomplete; Display-Ceremonies, 1 full and 1 mild one; Penguin-dance Ceremony, 1 complete mutual one and a unilateral one by the ♀ who also did a lone weed-trick display. All this was in late January; the pair commenced incubating during the third week of March and their young first saw the light of day towards the middle of April. Their second brood hatched out three parts of the way through June.

*The Advertising-display of the Female*

I have only recently (1954) outlined this more or less previously neglected behaviour in the B.T.O. journal *Bird Study*, so there is no need to go into full detail here although a more complete statement can now be made. A grebe advertising at full intensity is unmistakable by reason of its characteristic pose and manner of calling. It floats or swims very slowly with the neck moderately stretched and vertical crest and tippets apparently relaxed. The bird calls intermittently with a loud, far-reaching "grr-owp", the throat distending noticeably as it does so. This advertising-call is very throaty, drawn-out, and resonant. A second, much quieter sound follows, almost certainly caused by the effort of producing the main note—a moaning, purring "row-ah" like a letting out of breath. The display is essentially a vocal one, the posture merely being instrumental in affording the grebe a good view and in manufacturing the call.

I have recorded this display from *lone and apparently unmated* birds in the open water many times. On a few occasions when I have been sure of the sex of such grebes they have always been females. Also known *mated* females in the nesting-territory—and never the males—have not infrequently been heard and seen advertising when their mates were totally absent or at least well separated from them. All females seem to display thus because they cannot perform joint courtship or other sexual activities owing to the lack of a partner.

In the 1954 paper I stated that I had never known a grebe definitely recorded as a male to behave thus, though the chance of this being merely a matter of coincidence was not rejected. In the 15 months since that paper was submitted for publication, I have made further observations and also discovered some previously overlooked notes. In all cases where the sex of the bird was known, it was a female that was advertising and so it seems safe to suggest, therefore, that this behaviour is a specific feminine behaviour-pattern. If so, it is the only activity that the male and female Great Crested Grebe do not share, apart from the absolute sexual functions.

Huxley certainly saw this behaviour, but he did not draw any special attention to it apart from christening the call the "double-trumpet". He seems to give one definite and two probable cases in his diary abstracts—all three rather nicely involved females.



*Pair-formation*

Practically no definite information is to be found in the literature on how new grebe pairs are formed. Huxley himself doubted that courtship played a part in this, and even stated in his 1924 paper in *British Birds* that "There is no courtship until after pairing up". However, my own observations show that, as well as female advertising, some courtship does figure prominently, particularly head-shaking and the cat-display. I cannot pretend, though, that our knowledge of this most difficult subject is near complete enough; much more work is needed, if possible on individually marked birds. Richdale's fascinatingly exact studies on ringed Yellowed-eyed Penguins (*Megadyptes antipodes*) have shown that many more factors are involved in pair-formation than an initial round of courtship, which is all my notes cover.

New pairs are established almost invariably in the open water and not in the territory, mainly during the first five months of the year. Unattached females drift about giving the advertising-call and this sometimes attracts other grebes to them. Certainly at times, and presumably always, these last birds are males. Some are already paired (but inclined to flirt); others have no mate. The unattached males, in turn, seek a partner by approaching a female in the preliminaries of head-shaking. In both cases, whichever sex initiates the proceedings, the female concerned often cat-displays when approached and mutual head-shaking may occur, followed by Display and Discovery-Ceremonies. The couple may then part, at least for the time being, or continue to court.

*The Relation of Courtship and Advertising to the Reproductive-cycle*

As already mentioned (p. 10), some head-shaking courtship may be seen in many months of the year, though only at all regularly from about January to September, depending initially on the weather. The main courting months are from January to June, but the individual grebe by no means displays with equal fervour or frequency throughout its reproductive-cycle as has often been mistakenly assumed in the literature. This wholly wrong idea does not originate from any direct statement in Huxley's paper. He was not rash enough to reach such a definite conclusion on this point from observations which, though intensive, were also very limited in duration (some two weeks or so in early spring). It was from his theory that the various ceremonies served to maintain the bond between male and female during their long, joint task of rearing the brood, that later writers deduced that the grebe courts as much after egg-laying as before. This is just not true, but Darling (*A Naturalist on Rona*) referring to the grebe and



Huxley's work says that "the display which so obviously gives pleasure to both partners serves as an emotional bond of a union in which protraction till late in the season has a definite biological function". Richdale (*Sexual Behavior in Penguins*), again referring to Huxley's paper, makes an even more misleading statement (which may be true of penguins but certainly not of grebes) when he states that "the function of love-habits . . . is bond-holding, and is more noticeable *after coition has ceased*" (*italics mine*).

Grebe courtship declines as the reproductive-cycle progresses, but apart from this relationship, which will be traced in more detail below, there is another. Courtship is most intense in the early days (1-2 weeks) after pair-formation, in the case of new pairs, or after the beginning of the seasonal display of already formed pairs. This relation cuts across that one to the stages of the cycle. For example, a pair that has spent only a day or two courting in open water before establishing itself at a nest site, will display more intensely during the building phase than another couple that has taken 2 weeks over their initial display period. One pair, therefore, may commence the "platform-behaviour" stages (see p. 13) at an already lower courtship pitch than another but, in either case, display will decline both in frequency and intensity as egg-laying approaches.

#### *Relation to the Pre-parental Stages*

The onset of courtship starts after the variable winter period of much reduced reproductive activity has ended—when the head-ornamentation, the "display-plumage", develops again, perhaps as many as three months before egg-laying. There is then much activity in open water and the Head-shaking, Discovery- and Display-Ceremonies are all conspicuous. The length of this first stage of initial courtship varies considerably: some pairs revert immediately to the old territory while others spend many weeks doing nothing after the first big burst of display.

When the nest sites are chosen courting is still relatively common, especially while the birds are still only building. However, when they start to solicit on the platform as well it declines gradually. For example, I watched Pair A51 again on 28th January for 30 minutes longer than I had the day before, when their marathon sequence of display occurred. They were now building quite industriously and also soliciting on the platform, though not copulating. Only 14 Head-shaking Ceremonies and one Penquin-dance Ceremony were recorded in 110 minutes, and no Discovery- or Display- ones at all. Much of the head-shaking was induced by intruders in any case. When soliciting becomes frequent and coition regular, courtship decreases even more noticeably until, when the eggs appear, it has practically ceased.



Penguin-dancing is performed from the building stage onwards. At Burghfield I have never seen it except in the territory at the time when building is well under way, soliciting not infrequent but coition as yet rare. At first it seemed hard to reconcile this with Huxley's observations on the point, for he recorded Penguin-dance Ceremonies in open water from birds to all appearances in the first stage of their cycle. But he watched them on a water devoid of cover *where breeding was impossible*. Some of his grebes were psychologically at the correct stage but physically prevented from progressing with their cycle by the unsuitable environment.

Advertising-display occurs regularly from mated females throughout the pre-parental stages.

#### *Relation to the Parental Stages*

I have no records at all of advertising-display or of any courtship proper, besides head-shaking, during the period of incubation (when I once watched a pair for 170 hours all told) or while the young are being reared. Huxley's statement, in a later article in *The Countryman* (1944), that the sitting bird leaves the eggs, searches for its mate and performs a Discovery-Ceremony with it, is almost certainly incorrect. Very low intensity, often one-sided head-shaking display may occur from time to time in such circumstances as when one partner wishes to relieve the other on the nest. All the relatively intense Head-shaking Ceremonies are *induced* and usually follow an aggressive encounter.

#### *Subsequent Broods*

When the young are well grown their parents may start to become sexually inclined towards each other again, and occasionally start another brood. This second pre-parental period, whether it culminates in egg-laying or not, is never accompanied by courtship to the extent that the first one was. Head-shaking and, in its own special circumstances, female advertising do occur but normally no other form of courtship.

#### *A Preliminary Discussion on the Nature and Meaning of Grebe Courtship*

The main (known) facts about the courtship of the Great Crested Grebe have now been presented and it remains to assess their significance. A fully detailed discussion is not possible (considering space and the present state of knowledge) but I hope this outline will give the general reader a brief insight into the fascination of the theoretical side of the behaviour student's work, and also some idea of the methods employed by modern ethology in such analysis. The three major problems are those of the origin, internal causation (see p. 137) and function of all this complicated behaviour.



*The Probable Origins of the Courtship Displays*

Displays are what have been called by Tinbergen (1952) "*derived activities*": that is, they have been adapted and modified (ritualized) by natural selection from existing basic movements to serve a new "*signal*" function between individuals of the same species. No one has yet examined the possible derivation of the display movements used by the Great Crested Grebe in courtship. The way to do this is to compare these movements with those other of the bird's behaviour-patterns *which are not themselves displays*, that is the movements used in preening, feeding, comfort, etc. (pp. 93-102), in fleeing and attack (pp. 139-14), in copulating (see next section) and so on. Any resemblances and connections should be noted.

The origin of two grebe postures have already been indicated, the first having undergone some ritualization, the other not. Thus, the forward- (threat) display is quite obviously derived from the "*intention-movement*" of attacking a rival across the surface of the water. Then, the body attitude that the female assumes while advertising is mainly a by-product of producing and projecting the special "*double-trumpet*" call. These are relatively simple cases and the proper courtship movements, with one notable and very happy exception, are much more complicated and of older origin.

Let us first look at those displays used in the mutual ceremonies. The habit-preening display is the initial link in the chain of analysis. There can be no doubt at all that this has its origin in real preening movements. Habit-preening is the familiar companion of the head-shaking display which comprises the two movements of the head (waggle and sway), the upright posture of the neck and the cocking-up of the "*tail*". When these are examined in turn, first of all two further elements "*borrowed*" from true preening reveal themselves. These are the waggling action of the head (which has its basic counterpart in the comfort-movement used to detach water and feathers from the bill) and the cocking of the tail (functionally employed to open the oil-gland, apparently)—see p. 100. I believe the slow swaying of the head to be the "*intention-movement*" of dipping back to habit-preen: this often follows or sometimes replaces it, and every gradient between swaying and full habit-preening may be observed. This leaves open the origin of the upright neck posture. There is another situation besides head-shaking courtship, in which non-functional preening appears. Both the more complete displacement-preening and, rather less frequently, the abbreviated habit-preening itself, occur during hostile encounters between rival grebes when the main tendency is that of withdrawal (pp. 141-2). A strong connection between preening and fighting is suggested, and the resemblance between the upright head-shaking posture and the upright pre-attack one cannot be easily dismissed as merely coincidental. It is but a



small step after this to theorize that the "clash" of the Penguin-dance quite closely resembles the only other situation in which grebes meet in this way, namely the clash of fighting birds. Just as the head-shaking posture (modified from the upright pre-attack one) has had displacement-preening elements superimposed on it, the penguin-dance posture (modified from breast-to-breast fighting) has had displacement-nesting elements similarly attached. The weed-trick is quite clearly based on the collecting and carrying of nesting material: the mutual Penguin-dance Ceremony is a characteristic of the building stage of the cycle and I have already given the case of the female grebe who used weed actually collected for the nest in her subsequent unilateral dance.

An examination of those displays used in the reciprocal ceremonies supports the analysis above. The ghost-dive seems obviously to be a form of "symbolic" attack, with the ghostly-penguin emergence based on the movements for attacking from under-water. I have suggested (p. 144) that the cat-display is a defensive one and it is fitting therefore that it is in fact the normal "reply" to the ghost-dive in the Discovery-Ceremony, and follows the "escape" pattering-away in the Display-Ceremony. I believe that the conspicuous showing of the wing in the cat-display is, like the wing movement used in intense forward-display (p. 138), a ritualized intention-movement of flying. This has been suggested also by Daanje (1950) in a long review of such activities: he points out that the land-bird tends to droop the wings whereas the water-bird raises them because otherwise they would dip in the water. While the forward-display is based on the intention-movement of flying *at* the adversary, the cat-display is based on those of flying *away from* another grebe. It is in fact the "opposite" of the forward-display, the bird withdrawing the head instead of advancing it.

#### *The Probable Causation of Grebe Courtship*

Behaviour is caused by two main factors—objects in the external environment and internal impulses or drives. We will deal here with the latter. It seems very probably that, as the courtship displays are based mainly on attack and escape movements, the birds actually feel aggressive and frightened when in the presence of their mates. There is good evidence for this, but it is not the whole story. Theoretically, sexual tendencies are very likely to be present, and I believe that grebe courtship is a very special result of the interplay of all three of these drives, as I hope to show below in a brief investigation of "that whole emotional state" mentioned by Huxley.

No one would deny that courting grebes are sexually inclined towards each other; they must be or full courtship would not be the strictly heterosexual affair that it is. Also, like soliciting and copu-



lation, it declines when the eggs appear and parental behaviour-patterns take command. On the other hand, full courtship may occur many weeks before coition, and declines when soliciting and copulation become regular. Then, head-shaking may occasionally be performed by stripe-headed juveniles (some as young as eight weeks old) and their sexual inclinations can only be very mild at best. It takes place also after adult coition when sexual impulses must similarly be very weak. All this suggests that the sex-drive in courtship is a relatively low intensity one. It is inconceivable, however, that the complicated displays and ceremonies are merely the result of one unenergetic drive. Affairs make sense if it can be shown that such an impulse acts in conjunction with the aggressive and fleeing ones. The combination of the three in varying strengths and dominations produces the courtship. Work on these relations is still in its very early stages.

As I have shown in the descriptive sections, actual attack and escape tendencies may appear from time to time, before, during, and after both the mutual and reciprocal ceremonies. Also the forward-display in some form often preludes these ceremonies, while head-shaking is frequently (and penguin-dancing occasionally) induced by aggressive encounters when bad feelings must be running high. Courtship is more frequent and intense in those early days after the onset of reproductive behaviour: birds are more inclined to feel aggressive and frightened towards their partners at the very beginning of their cycle, before they have had time to get used to close contact with them, as I have recently (1955) shown to be the case with Little Ringed Plovers (*Charadrius dubius*).

The interplay of the three drives may be indicated by the following examples. Mutual head-shaking may be terminated in several ways. The birds can do much habit-preening, which suggests that escape tendencies are coming to the fore. If these assert themselves, one of the grebes may patter away and turn round in the defensive cat-display (the Display-Ceremony). Much habit-preening may be in evidence in the renewed head-shaking bout. Otherwise the couple may break off from a very intense Head-shaking Ceremony and swim-together to the nest (if it has one), showing that a more complete sexual impulse has taken command of the situation. Yet again, a full bout of head-shaking may be followed by a Penguin-dance Ceremony when, I think, both the aggressive and, to a lesser degree, the sexual drives are well worked-up.

#### *The Probable Function of Grebe Courtship*

As stated above, displays are "social-signals", that is they have been evolved by natural-selection to release (or inhibit) an immediate response from a fellow member of the species. One of the great



mysteries of bird behaviour has been the "missing" releaser function of Great Crested Grebe courtship! It seems to lead to nothing definite, unlike the soliciting-displays which terminate in coition. The answer is as simple as it is obvious: the immediate aim of courtship display is to elicit courtship display in return from other grebe. Courtship begets courtship—mutual or reciprocal—and in such a way do the ceremonies result. Thus, head-shaking bouts build up through the mutual stimulation from both birds and may also be induced by the sight and sound of other grebes behaving in a similar manner. The ghost-dive releases the cat-display (and occasionally *vice versa*) and so on.

What purpose does this serve? If the birds display together, and they often just cannot "resist" so doing, they are unable to show more functional attacking and fleeing movements towards each other. Courtship both inhibits these "pair-disrupting" impulses and absorbs them at the same time. As already discussed (pp. 137, 145-6), if the aggressive and escape drives were allowed uninhibited expression in such a potentially hostile bird as the grebe, the reproductive-cycle would be seriously interfered with. The origins of the display movements themselves strongly suggests that once, a long time back in the history of the species, actual hostilities between the male and the female were more intense and frequent than they are at present. The courtship has now replaced this (and also very probably acquired further functions of a more long-term nature, such as sexual stimulation and synchronization). In case it should be thought that I have stretched imagination too far, I would point out that one of the more primitive of living grebes, the Pied-billed (*Podilymbus podiceps*) of America, does, according to Glover (1953), actually force-copulate in the water unlike any other species of grebe.

The question may be put: Isn't this a very complicated way of soothing over the differences between the sexes? It certainly is. Grebes are primitive birds, ancestors very similar to the living forms having been found in the Oligocene deposits of 30-40 million years ago. Their courtship belongs to the more complicated era of evolution, being one of natural-selection's earlier answers to the aggressive/escape set-up of pair relationship. Since then the tendency in evolution has been towards the simplification of such processes, a similar tendency to replace the symbolic by the more functional being found in man's customs, including religion. The development of an elaborate courtship system in the grebe was assisted, no doubt, by the large amount of leisure that its feeding and digesting habits left it (pp. 93-4, 98).

(To be continued)



## REFLECTIONS ON STORKS

By KENNETH SMITH (Paignton, Devon, England)

The storks, like the cranes and herons, have always held a particular interest for me. All birds add charm and interest to the natural scene, but none excels these long-legged species in lending elegance to panoramic beauty. Storks are distributed nearly throughout the world, the White Stork (*Ciconia ciconia*) being the familiar European species. Britain has, as is well known, virtually no storks. The White Stork does not breed here, and comes only occasionally as a very rare visitor.

Few zoos, and fewer (if any) private aviculturists, go in for storks to any extent. San Diego Zoo is, I believe, a happy exception, with a fairly representative collection. Storks are highly carnivorous, therefore quite expensive to feed in numbers, and their very size makes large aviaries or enclosures essential. It is little wonder, then, that storks are almost only exhibited in zoological gardens where admittance or gate money covers the cost of their housing and maintenance. Nevertheless, I have often thought that a place for storks (and perhaps cranes and herons too !) conducted on the Slimbridge style, would be delightful.

Some pleasant days in the tropics were made more memorable to me by the sight of storks. Around Keren I remember trees loaded with nesting Abdim's Storks (*Sphenorynchus abdimii*), and I recollect that later I descended to the hot Eritrean plain and on a small rock mid-stream of the Setit River saw my first Hammer-headed Stork (*Scopus umbretta*). Abdim's Stork is fond of human habitations ; at Keren many nests actually overhung native huts, and some could almost be reached from the ground, but the Africans did not molest the birds, as they believed their dead relatives entered the bodies of the storks.

On Lake Mabesi, in the south of Sierra Leone, flocks of Open-bills (*Anastomus lamelligerus*) flew from the topmost branches of partly submerged trees as my frail canoe pushed through the high reeds towards them. Seen in profile, even in flight, one can see easily the open part of the bill, and when outlined against the sky this feature makes identification certain. This peculiar bill is helpful to the bird in extracting water snails and molluscs from their shells.

It was in Sierra Leone too, that I came across Woolly-necked or Bishop Storks (*Dissoura episcopus*). Four of these engaging creatures were brought to my collecting camp, looking very pious and important. The appearance of piety was increased at feeding times when they bowed repeatedly over the fish and meat offering, as if giving thanks in prayer. These Bishop Storks went to San Diego Zoo, and



Mrs. Benchley informed me they were the first of the African race to be shown there.

Along the Ireng River, which divides British Guiana from Brazil south-west of the Pakaraima Mountains, I have seen handsome Maguari Storks (*Euxenura maguari*). They would not allow close approach, so I watched from a hillside overlooking this valley in an unpopulated wilderness. Their posture suggested contemplativeness, like the herons standing by English willows on the banks of the Evenlode I watched years before. I saw no wild Jabiru Storks (*Jabiru mycteria*) in Guiana, only a single tame specimen in the small Zoo in Georgetown.

Two storks frequently exhibited in zoos are the African Marabou (*Leptoptilos crumeniferus*) and the Indian Adjutant (*Leptoptilos dubius*). They have bare necks like vultures, and like those birds they scavenge at carcasses. Both species are fairly hardy and do well in confinement.

Strangest of all storks is the Shoe-bill or Whale-headed Stork (*Balaeniceps rex*) of the White Nile region. It is usually seen standing solitary in marsh or papyrus swamp, where it seeks fish and frogs. Its grotesque bill makes the Shoe-bill a desirable and attractive Zoo inmate, but it needs considerable care. It must have constant access to a pond or pool; Dr. Vevers told me this was proved vital in London Zoo, otherwise the feet and legs were soon affected and disaster ensued.

As civilization spreads over wild lands, steadily and inexorably year by year, storks, like many other large birds, will find living conditions more and more difficult. Their age-old habitations are being destroyed or spoilt by general development undertakings, and especially by the drainage of marshes and pollution of rivers. Hydro-electric schemes, like the Kariba and Kafue projects in the Federation of Rhodesia and Nyasaland, are followed by widespread networks of overhead power lines. Large birds like storks often collide with power cables or sometimes meet death by electrocution. The modern method of locust control involving the use of poisons is another menace.

In conclusion, to offset to some extent these melancholy thoughts, one must acknowledge the increasing interest in wild life and fauna preservation. This interest is stimulated by the press and cinema and by sound radio and television. Our priceless animal life heritage, storks included, can perhaps be saved for posterity if this great and growing popular interest can be converted to channels of positive and practical action towards conservation.

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## THE FIRST BREEDING OF THE YELLOW RED-RUMPED PARRAKEET IN THE U.S.A.

By DAVID M. WEST (Montebello, California, U.S.A.)

A first breeding of any species or variety is probably an event worth recording in the pages of the AVICULTURAL MAGAZINE, and for that reason I send these notes on what is probably the first breeding of the yellow variety of the common Red-rumped Parrakeet. Possibly, to be on the safe side, I should say that the young female yellow Red-rump I reared this year is the first to my knowledge. (In the U.S.A.)

The early history of the yellow variety has been given by the owners of the Keston Foreign Bird Farm in the Jan.-Feb., 1949, issue of the *A.M.*, page 12. Possibly the salient point is that the first and original matriarch of this line was a wild-caught bird sent from Australia to the late Duke of Bedford in 1935 and that her progeny provided the basis for the yellow Red-rumps now in Europe and in many other countries. It might be noted, however, that A. A. Prestwich, in *Records of Parrots Bred in Captivity*, Part VI, mentions that other yellows or "cinnamons" have been bred in Australia on several occasions. Personally, I feel that the term "yellow" is quite an adequate description of the bird, where it would be quite inaccurate to term this black-eyed, sex-linked mutation a "lutino". I note that Mr. Brooksbank prefers "pastel" to "yellow".

The first yellow of this variety I can recall seeing was at a dealer's shop about 1950. This bird, a female, was sold to a local aviculturist, but to date she has not reproduced, despite all efforts on the part of her owner to provide her with a suitable husband and accommodation.

I obtained my first cock split yellow Red-rumps during the summer of 1953. My first efforts with these split cocks were very discouraging. One bird had a slightly withered foot and never prospered and eventually died. The remaining cock flourished and during the 1954 breeding season reared two young, both normal coloured, which turned out to be a pair. A second nest in 1954 consisted of four clear eggs and during the present breeding season they did not breed at all, though mating was observed. I think it very odd, since this year they were in a much larger and better breeding flight—but they never really settled down, so possibly next year they will do better. Incidentally, I might add that the young reared in 1954 themselves reared three young cocks in 1955 and have a second nest at this time (May, 1955).

In 1954 I was very fortunate in securing another split cock and his mate—a yellow hen. These were really exceptionally fine birds, very large and robust, and great hopes were entertained for them. However, counting your chickens, or yellow Red-rumps, before they hatch is a



poor policy and the lovely yellow hen got stuck in the moult and died.

Her mate is one of the finest cocks I have ever seen and so it was decided that the only alternative was to mate him to a young normal female, especially chosen for her size and good colour. They were placed together in the fall of 1954 and hit it off perfectly, with the male flying instantly to her side and display and feeding taking place within a few minutes of their introduction.

Throughout the winter the pair continued to be devoted and exhibited the devotion to each other that mated pairs of Red-rumps characteristically show. It was a great disappointment, then, when one morning in February the hen was found to be in a semi-paralysed condition. This condition persisted, and each day she grew a little weaker and more helpless and eventually died. A post-mortem revealed a ruptured vessel in the brain and the probable cause was a night fright caused by some cat.

As the breeding season was now fast approaching, every effort was made to find a good breeding hen. Although a two-year-old hen would have been preferred, the only available hen was a year-old bird and so she was obtained.

The cock was now, in early March, in high breeding condition, and for this reason I hesitated about releasing the hen directly into his aviary. However, this plan was followed and the cock expressed his immediate approval and satisfaction by displaying and calling and attempting to feed the new arrival. For the first few days the hen was a little skittish and did not accept his advances too readily, but fortunately the cock did not fly into a rage, and was reasonable about the situation, so that at the end of the week the new hen was quite ready to be courted. As March progressed, a nest was introduced and the hen became quite steady and very much interested in the nest-box. Within a few days after the introduction of the nest-box, pairings were observed during the early morning and evening hours. After this the hen began to spend an increasing amount of time in the nest getting it ready for family use.

During the first few days of incubation the hen was nervous and sat very lightly, coming off if anyone entered the aviary. Within a few more days she settled down and was rarely seen out and away from the nest. If she did observe anyone about when she was off feeding, she would immediately fly to the box and tumble in it with great rapidity. At the end of the second week of incubation a chance to inspect the nest presented itself, and a very cursory glance revealed seven eggs, the majority of which appeared fertile.

About the twenty-third day after incubation began, a broken egg-shell was found on the floor of the aviary. With this favourable sign the amounts of hemp, soaked bread, and greens such as *poa annua*, were increased. Very large amounts of food were eaten and since the



nest-box was known to contain seven eggs, one could hardly resist dreaming of seven youngsters—at least some of them yellows !

All continued to progress smoothly and after the end of the first week the hen continued to spend more time away from the nest. Both parents continued to eat large amounts of food, so it was felt that the young were probably progressing satisfactorily. When the babies were about seventeen days old, I weakened, and took a look. There were five youngsters and one egg—but no sign of the seventh egg. The examination revealed what had been secretly hoped for—a lovely yellow chick, with just a few of the yellow feathers beginning to appear.

From this point on, no further investigations were made. The young began to leave the nest about the thirty-third day subsequent to the estimated date of hatching and were easily seen to be three cocks and two hens. Upon first leaving the nest the youngsters were a little uncertain on the wing, but this condition improved very rapidly and within the week they were very expert.

From past experience with Red-rumps and their close ally the Many-coloured, it was realized that a careful watch would be necessary to prevent the parents from turning on their young in their zeal for a second nest. Beginning about the fifth day the male began to chase the young males about and, so as to protect the youngsters, he was caught and placed in an adjoining pen. He continued to feed the young through the wire and at the end of the tenth day the five young were caught up and placed in another aviary and the parents then placed together again.

A few notes on the physical surroundings of this pair may be of some value and interest. The breeding pen was 8 feet high, 3 feet wide, and 15 feet long. A shelter at one end was provided, though the pair used it only on rainy days, very seldom using it on a rainy night. They like to roost in a corner against some of the wooden studs and in one of the most exposed portions of the aviary.

The diet consisted of all the sunflower they wanted and another bowl of mixed canary, millet, hemp, and oats. They are not very fond of fruit, but will eat a little of their daily apple and orange. They like fresh corn on the cob and will spend a great deal of time working on an ear of it. Greens of all kinds are appreciated.

The nest-box itself was about 12 inches wide, 10 inches high, and about 18 inches deep—a little larger than is usually used for Red-rumps here in California. The nest was hung just under the edge of the shelter, so as to provide maximum ventilation and light and still not be in the rain or sun. Fine wood chips were used inside the box.

Young Red-rumps mature very rapidly and often will breed when just a year old. My personal experience has been that they are never safe with other birds during the breeding season. I have had extra



males that would not hesitate to attack Crimson-wings in the spring, although they were agreeable enough together during the winter months. A pair of Red-rumps will work together in a team (like Blue-bonnets) in any fracas and, so to be on the safe side, it is best to keep the Red-rumps apart from mixed collections of birds.

Young males colour rapidly and within a few short months after leaving the nest are nearly in adult plumage. Males of the year are almost never as bright as older males, but there are exceptions. A young male raised two years ago was always a more brilliantly coloured bird than the father and unusually highly coloured upon leaving the nest.

As the yellow Red-rump is a sex-linked mutation, the next step is to mate the yellow daughter back to her father, and from this union yellows of both sexes might be anticipated. As I have never seen a yellow cock, I am very hopeful that next year will produce at least one yellow Red-rump cock.

\* \* \*

## SOME HYBRID WATERFOWL

By W. H. PAYN (Hartest, Suffolk, England)

During the past few years a number of hybrid ducks of definite parentage have been reared in my collection here in Suffolk. Whilst I am aware that hybrids are not to everyone's liking, I nevertheless feel that a description of them should be recorded in the AVICULTURAL MAGAZINE for the benefit of those interested in the interbreeding of species.

At least two of these hybrids have occurred before in captivity, one fairly frequently. Pairs of the first two are now on view at the Wild-fowl Trust, Slimbridge.

COMMON SHELD-DUCK (*Tadorna tadorna*) × RUDDY SHELD-DUCK (*Casarca ferruginea*).

A brood of eight was reared, four males and four females.

*Day-old Duckling*.—Like Common Sheld-Duck, with pale spot in centre of dark patch on shoulders.

*Adult Male*.—An extremely handsome bird, resembling the Common rather than the Ruddy Sheld-Duck, in voice, build, shape of bill, and general habits.

Body colour a very rich, deep chestnut ochre, much darker than the Ruddy Sheld-Duck. Head deep chestnut-brown; cheeks, paler; traces of white collar. Belly deep brown; rump, greyish-white, heavily pencilled black. Tail and upper tail-coverts glossy black; under tail-coverts rich chestnut. Wings as in Common Sheld-Duck, but



scapulars pencilled black. Secondary wing-coverts have inner web white, outer web chestnut. Feet and legs grey flesh; bill pinkish, mottled black.

*Adult Female*.—Greyish, heavily pencilled black, but with a bright chestnut wash on breast and shoulders, and a pale chestnut wash on wings and lower back. Belly dark brown. Head greyish-chestnut with broad white collar. Eyelids and base of bill white. Bill grey with slight pink tinge. Wings and feet as in male.

PINTAIL (*Anas acuta*) × MALLARD (*Anas platyrhynchos*).

Three reared, two drakes, one duck.

*Day-old Duckling*.—Exactly like Pintail, but more robust.

*Adult Male*.—Head deep bronze-green with broad white collar extending up sides of neck. Mantle and flanks light grey finely pencilled darker. Upper and under tail-coverts black. Breast brownish-orange, darker at sides. Belly white. Tail black, centre feathers elongated and slightly up-curved (much longer and less curved than in Mallard). Wing mirror dark green with chestnut bar above and black-and-white bars below. Bill as in Pintail drake. Feet and legs yellow-ochre, webs darker.

*Adult Female*.—General plumage pattern follows female Mallard, but colouring much greyer. Head like Pintail but greyer, fringes to mantle pale and narrow. Lower breast white, less heavily streaked than Pintail. Two central tail-feathers elongated. Upper wing-coverts greyish. Wing mirror as in male. Feet and legs greyish-ochre, webs darker. Bill dingy yellow. In general appearance these hybrids resemble Pintail rather than Mallard, being slim and long-necked.

TUFTED DUCK (*Aythya fuligula*) × MALLARD (*Anas platyrhynchos*).

Two hatched, one female reared.

*Day-old Duckling*.—As Mallard, but darker.

*Adult Female*.—Resembles a large, thickset Tufted Duck. Head dark brown, cheeks paler, heavily freckled darker. Mantle, lower back and upper tail-coverts rich dark brown, with paler fringes. Tail grey, under tail-coverts whitish. Breast brownish, heavily barred dark brown. Belly and flanks dirty white, mottled grey-brown. Wing-mirror greyish with two white bars. Scapulars have greenish sheen. Iris dark brown. Feet grey-green, webs black. Bill black with grey band.

This bird began diving freely when about seven days old. In general habits resembles Tufted Duck, but it is a noisy bird, with a harsh quack.

In addition to the above, a hybrid Common Teal (*Anas crecca*) × Shoveler (*Spatula clypeata*) was reared here in 1943, a full description being published in the *Ibis*, October, 1943, and *Bull. B.O.C.*, May, 1949.



## MY LANCEOLATED JAYS IN 1955

By DEREK GOODWIN (Virginia Water, Surrey, England)

Those who read the previous accounts (Goodwin, 1953 and 1954) of my Lanceolated Jays may perhaps be interested to learn how they have fared (so far) this year.

Once again the male Yellow (birds are named after colour of their leg rings) and the female White refused to pair with each other, even though I had moved them to an aviary some way away from, but unfortunately not out of sight and hearing, of the others. Green and Blue nested early in the same site as in 1954. Blue laid the first of her clutch of five eggs on 13th April. The previous two mornings having, as previously, seen "dress rehearsals" of the laying.

On 30th April at least two young had hatched. On 5th May, when I looked again the nest contained three young only, two of which were somewhat larger than the third. On 7th May only two young remained. Blue's belly feathers were stiff and clotted with dried blood, so that she is very strongly suspected of having killed and eaten one of her children. The young stayed rather long in the nest or on its edge and it was not until 24th or 25th May that they definitely left it. Next morning, after a wet night, one was found soaked and dead among the grass. The other is so far (date of writing, 22nd June) doing well. It has been feeding itself to some extent for about ten days, but is still fed regularly by Green, although its mother, Blue, has recently lost interest in it and attacks it when it begs from her.

The feeding regime differed from that of last year only in that, owing to the lateness and scantiness of the local caterpillars and cockchafer crops, I was unable to supplement the ration with these. Hence mealworms and ant pupæ were at least 99 per cent of the insect food given the young. Perhaps as a result, the young developed rather more slowly and the survivor showed a marked improvement after leaving the nest, due, I think, to the parents then feeding milk-sop and other artificial food to a greater extent. As with the 1954 young one, the present bird, although showing all the other typical juvenile plumage characters, has the blue on wings and tail as bright as in the adults.

To my surprise Blue, in early June, laid three more eggs in the same nest, which they had relined after removing the old lining. As I contemplated leaving home for some weeks in late June, I was a bit perturbed at this development. Blue, however, solved the problem by eating or hiding her eggs (I suspect the former) after having incubated about a week. This may well have been due to my looking at the nest too often. I think, however, the time of year and onset of the moult may have been of more importance in causing this lapse.



I think the laying of a second clutch was an unnatural piece of behaviour caused by the birds not having to expend a great deal of energy in seeking food for their young, as wild Jays do. Certainly the male Green was in full sexual condition throughout the whole of the incubation and rearing periods, constantly displaying to his mate and often trying to copulate with her, whenever she came off the nest.

The behaviour of the birds was as in 1954, Blue protesting violently whenever I went anywhere near the nest, but Green showing no signs of alarm or anger. If, however, a stranger entered the aviary he would at once scold as vehemently as his mate.

#### REFERENCE

GOODWIN. 1954. "Lanceolated Jays Breeding in Captivity." *Avic Mag.*, 60:5, pp. 154-162.

\* \* \*

## PAN-AFRICAN ORNITHOLOGICAL CONGRESS IN 1957

The South African Ornithological Society intends to organize a Pan-African Ornithological Congress at the Victoria Falls in July, 1957. The duration of the Congress, excluding the excursions, will be one week. An estimate of costs will be put out in the near future.

The Congress will be organized on the following lines:

*Sections.* Papers will be divided into the following sections, which may be further sub-divided, if necessary:

Systematics and Anatomy  
Breeding and General Behaviour  
Conservation  
Migration  
Ecology and Distribution.

Each Section will have a Chairman, who will be an ornithologist from Africa, having knowledge of the subject. Each Section will also have a Recorder, whose primary duty will be to note the main points raised in the discussions.

On the final day of the Congress, distinguished ornithologists specializing in the subjects of each section will be invited to sum up the contribution made by the papers in that section.

*Hours.* The hours for the sessions will be 9 to 12.30 in the mornings, and 2.15 to 4.45 in the afternoons.

*Excursions.* There will probably be three excursions, one or two before the Congress begins and one or two after it has ended. One of these excursions will probably last a week and others two or three days each.

*Scope.* Papers submitted to the Congress must be of one or other of



two kinds: either general reviews of the present position in a special branch of ornithology, with or without special reference to Africa, or specifically African in scope.

*Publication of the Proceedings.* The Chairman and Recorder of each Section will be responsible for preparing the papers and summary of the discussions in their own Section for the Press, under the co-ordination of a General Editor. Papers will be printed in one volume.

*Further Information.* Further information will be sent out from time to time. Those interested in receiving it promptly are asked to send their names now to the Hon. Secretary, South African Ornithological Society, P.O. Box 1616, Cape Town, South Africa.

\* \* \*

As papers on avicultural subjects have been conspicuous by their absence at the International Ornithological Congresses in recent years, it is to be hoped that this deplorable state of affairs may be remedied at the Pan-African Conference and that papers will be forthcoming.  
—ED.

\* \* \*

## LONDON ZOO NOTES

By J. J. YEALLAND

The true wild Canary (*Serinus canarius*) must be a rare bird in collections nowadays. These large Serins must originally have been kept more for their song than for their appearance. They seem to have been first imported into Europe early in the 16th century and evidently took well to captivity, for it is of course from them that the many fancy breeds have been evolved by selective breeding. Four of these wild birds have been presented by Señor Martins of Madeira, where they are apparently not uncommon, but I do not know whether they are still plentiful in the remainder of their range—the Canary Islands and the Azores. It will be interesting to see how their song compares with that of the domesticated birds.

Other birds of interest received during the past two months include eighteen Tovi Parrakeets (*Brotogeris jugularis*), two Petz's Conures (*Eupsittula canicularis*), and a young Amazon parrot not yet identified. These were all sent from San Salvador by Mr. W. H. Chippendale, who also sent a White-browed or Spectacled Parrot (*Amazona albigrons*), but it was ill on arrival and died a few hours later.

Some waders—a Redshank, a Bar-tailed Godwit, a Turnstone, an Oyster-catcher, a Dunlin and two Ringed Plovers—have been presented by the Copenhagen Zoo. Two Fraser's Eagle-Owls (*Bubo pænsis*), a Common Quail (*Coturnix coturnix*), and a Forest Senegal



Kingfisher (*Halcyon senegalensis fuscopileus*), new to the Collection, have also been presented.

The most delightful of the newcomers are four Sun Gem Humming Birds (*Heliactin cornutus*) and a Frilled Coquette Humming Bird (*Lophornis magnifica*), neither species having been in the Gardens before. The Sun Gems are exquisite; they have black faces and black pointed beards, the top of the head is a metallic blue and on either side of the head is a horn-like tuft of golden-green feathers. The back is pale golden-green and the underside is white, while the long tail is brownish-green and white. The females are golden-green above and white beneath. The Frilled Coquette must be one of the very smallest of the Humming Birds and the wings are comparatively short, so that the hum produced in flight is of a higher pitch than that of the longer-winged birds. All these were presented by Mr. H. Randau.

A Brazilian Swallow-tailed Humming Bird (*Eupetomena macroura*) has been received in exchange.

The nesting birds include King Penguins, two pairs having eggs, Snowy Owls, Grey-winged Trumpeters, Brush Turkeys, Red-breasted Geese, Green-winged King Parrakeets, Quaker Parrakeets, Masked Lovebirds, and Cockatiels. The Rheas have three eggs so far, the Choughs nested but threw the eggs out, and the Stone Curlews have laid two or three clutches, but do not sit on them, possibly because of the presence of other Stone Curlews in the aviary. Egyptian, Upland and Canada Geese have some well-grown goslings.

Three Sunbirds have just arrived from Singapore as a present from Squadron-Leader K. C. Searle. They are two male Malayan Yellow-breasted—Yellow-bellied would be a more appropriate name—and a Malaccan or Brown-throated (*Anthreptes malacensis*), a far more beautiful bird than it appears from the coloured plate in *The Birds of the Malay Peninsula*.

\* \* \*

## BRITISH AVICULTURISTS' CLUB

Meetings and dinners during the 1955-56 session have been arranged for the following dates :—

14th September, 1955

9th November, 1955

11th January, 1956

14th March, 1956

9th May, 1956

ARTHUR A. PRESTWICH,  
*Hon. Secretary.*



## NEWS AND VIEWS

Major Albert Pam celebrated his eightieth birthday on 27th June, 1955, and a telegram of congratulations was sent by the President and Council of the Avicultural Society.

\* \* \*

Adelaide Zoo.—Once again the old pair of Rheas has produced a family. Six healthy young ones were hatched. Unfortunately one of these was subsequently injured and died, but the other five are well on their way to being added to the large colony of Rheas in the Zoo.

\* \* \*

The late Duke of Bedford's famous blue Ring-necked Parrakeets have successfully reared a nest of four at the Keston Foreign Bird Farm. This has been a good season for blues as progeny of this pair have reared three young with Mrs. G. T. Clark, and three with E. N. T. Vane. In addition, David West has bred two in California.

\* \* \*

On 3rd July John Yealland, Curator of Birds, Zoological Society of London, flew to British Guiana to supervise the packing and transport of the birds and animals collected by the joint B.B.C. and Zoological Society collecting and filming expedition, under the leadership of J. W. Lester.

The state of Jack Lester's health necessitated his return to England by air, instead of by sea with the collection as intended.

\* \* \*

C. M. Payne reports a "Spotted Towhee in the nest which is twelve days old and doing well. The parents laid three eggs but only hatched the one youngster". Neunzig says the Red-eyed Ground Finch, or Towhee (*Pipilo erythrophthalmus*), "has been repeatedly bred"; first by G. Landauer, according to Russ. But this would seem to be the first time the Oregon subspecies (*P. maculatus oregonus*) has at least partially reared a young one in captivity.

\* \* \*

Edinburgh Zoo.—D. Bowles, Director-Secretary, reports of the penguins in 1954: "Several records were established in breeding these birds. In the first place, a total of fifteen were hatched and reared without loss; this is the first occasion upon which no chick has died before reaching maturity but it is only fair to say that the exceptionally wet summer may have contributed to this success. The distribution of births among the species was seven Kings, four Gentoos, three Maccaronis, and one Ringed."

\* \* \*

Should the vernacular name of *Eudyptes chrysolophus* be spelled



Macaroni or Maccaroni? Dr. Newton suggests it might have been a name applied by seamen when the word was a cant term for a fop or exquisite, with his hair dressed in extravagant fashion, this bird having its head more conspicuously adorned than its congener *E. crestatus*, the Rock-hopper Penguin, amongst which it breeds. If this suggestion is acceptable the spelling with one "c" is the correct one.

\* \* \*

Breeding reports from C. af Enehjelm, Helsingfors. Lesser Rock-Sparrow (*Petronia dentata*).—First nest, two young left; second nest, one young; third nest, two eggs, not hatched; fourth nest, sitting on three eggs. Little Owl (*Athene noctua*).—Five young ones left the nest and all are thriving. Bred in an indoor flight. Wood Pigeon (*Columba palumbus*).—Two young fledged. Guiana Parrotlet (*Forpus passerinus*).—"This year I put up one pair in one of my indoor flights. Seven youngsters left the nest, two died later."

A. A. P.

\* \* \*

## NOTES

### PARROTS IN SIR EDWARD HALLSTROM'S COLLECTION

I have just returned from a very brief visit to Sydney and took the opportunity of seeing Sir Edward Hallstrom's collection and also Taronga Park. Sir Edward now has ten of the true Golden-shouldered Parrakeet (*Ps. chrysopterygius*) which I had never seen in life before, as well as several hybrids bred from the first two cocks he obtained, mated with Hooded hens. He has a large number of the hybrids from Many-coloured × Hooded and whilst the adult cocks are quite close to Paradise Parrakeets (although having a yellow instead of a red frontal band), the adult hens are not a bit like Paradise hens, but are intermediate between Hooded and Red-rumped hens, without even as much colour as a Many-coloured hen. Another bird new to me was the Blue-cheeked Rosella (*Pl. amathusia*) which is the extreme northern race of the common Pale-headed or Mealy Rosella (*Pl. adscitus*). They have more blue on the cheeks, a creamy patch on the upper breast, and the lacing on the mantle is not as golden as in the Pale-headed, but appears to be suffused with blue. In addition, they are smaller. Sir Edward had three examples of these. He has a large number of yellow Indian Ring-necks, breeding freely; almost certainly the only ones in Australia. There were several pairs of Musschenbroek's Lorikeets (*Neopsittacus musschenbroeki*) and two pairs had a recently fledged young one; I am not sure whether this breeding success of his has been recorded previously.

He now has ten fine examples of the Glossy Black Cockatoo and the young bird that he bred last year is now independent. He still has quite a number of the Double-eyed Dwarf Parrot (*O. diophthalma*) which have hatched young but never reared them; he also has a single example of *O. edwardsi* (a hen).

Taronga Park is always interesting. New birds to me that were on exhibition there were the White-headed Pigeon (*Columba norfolciensis*), which is commonly known as the "Baldy", and a Grey Goshawk (*Astur novaehollandiae*) which I had once seen in the wild state, but never in captivity. They have nearly 150 Birds of Paradise on exhibition.

I still have no birds of my own, but my elder son acquired a pair of Leadbeater's Cockatoos last spring and they promptly reared a young one for him! He is now anxious to try out some of the other Cockatoos. He also has a pair of Red-collared and a pair of Scaly-breasted Lorikeets.

ALAN LONDON.



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C. OLIVER, 135 Mill Lane, Denton, nr Manchester. Proposed by A. Martin.  
J. RICHARDSON, 106 Bransty Road, Whitehaven, Cumberland. Proposed by G. J. Irving.

### NEW MEMBERS

The sixteen Candidates for Election in the May-June, 1955, number of the AVICULTURAL MAGAZINE, were duly elected members of the Society.

### CHANGES OF ADDRESS

- WOLFGANG DE GRAHL, to Otto Ernst Strasse 6, Hamburg-Grossflottbek, Germany.  
D. C. FRANKS, to Argyll, 75 Old Road, Harlow, Essex.  
N. A. LEE, to 31 Abbeyville, South Shore, Blackpool, Lancs.  
Dr. N. A. ROSSITER, to Colonial Mutual Bldg., West Street, Durban, Natal, S. Africa.  
PAYSON VUCOVICH, to 15731 Fargo Avenue, Hanford, Calif., U.S.A.  
G. E. WHITMORE, to 40 Charlemont Avenue, West Bromwich, Birmingham.

### CHANGE OF STYLE AND ADDRESS

- Major S. F. COYNE, The Sherwood Foresters, Normanton Barracks, Derby.

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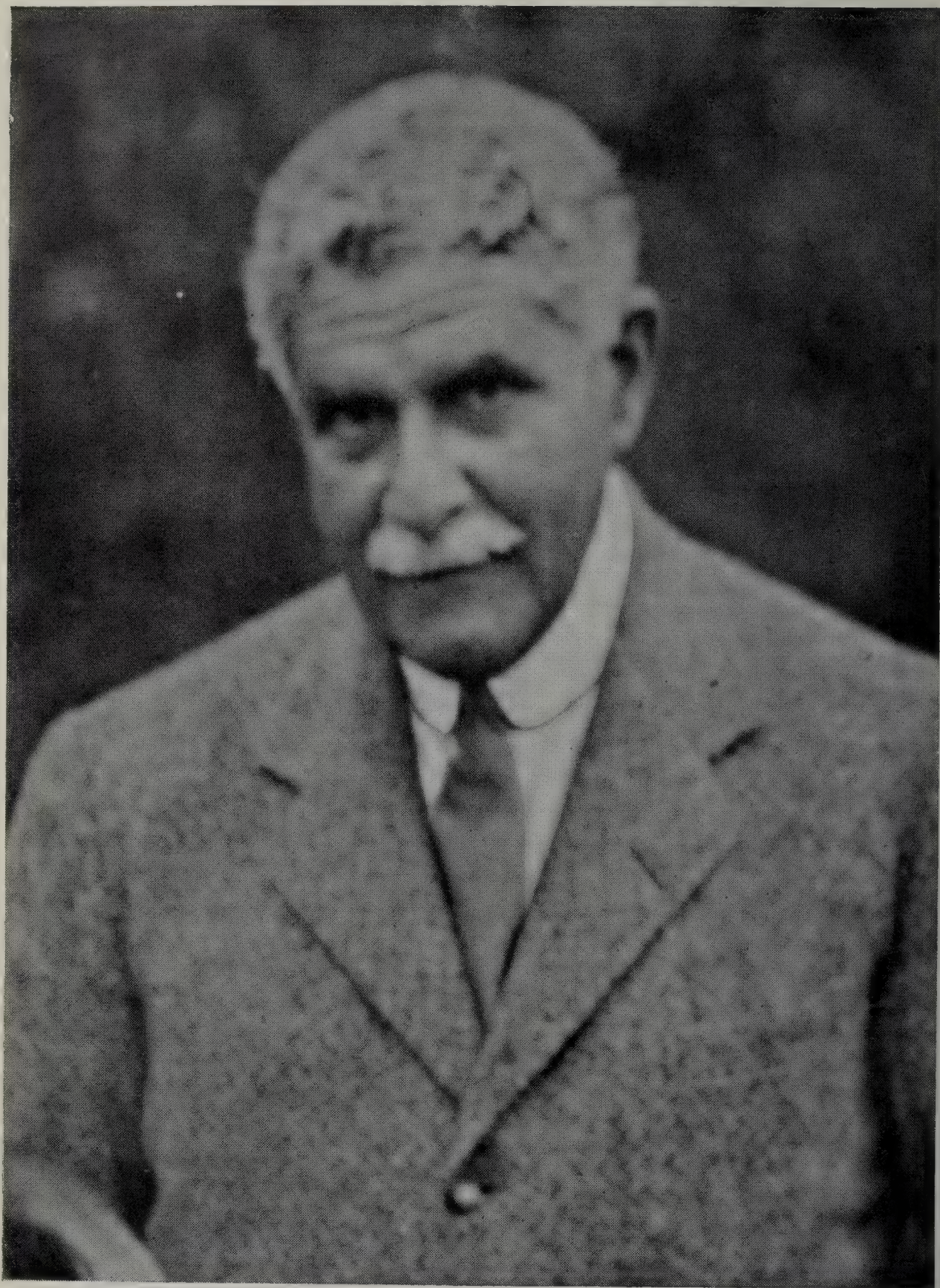
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*[D. Seth-Smith*

ALFRED EZRA, O.B.E.

President of the Avicultural Society, 1926-1955.

*Frontispiece]*



# AVICULTURAL MAGAZINE

THE JOURNAL OF THE AVICULTURAL SOCIETY  
AND THE AVICULTURAL SOCIETY OF AMERICA

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## IN MEMORIAM

ALFRED EZRA, O.B.E.

To most of the members of the Avicultural Society the news of the death of our President which occurred on 1st August, has come as a great shock, and to the many who knew him well as the realization of the loss of a dear friend.

Alfred Ezra was the son of Elias David Ezra, a prominent Jewish merchant in Calcutta, his brother the late Sir David Ezra, several times Mayor of Calcutta, being a frequent visitor to this country and also a great aviculturist. Alfred took up his residence in England after some extensive travelling in the Pamirs and Turkestan where he collected many fine hunting trophies and became very interested in the birds he encountered. Although he had a London house he always preferred the country so, in 1919, he acquired the 300 acre estate of Foxwarren Park, Cobham, Surrey, in which he was able to indulge his ambition of keeping rare foreign birds and mammals under ideal conditions. Strangely enough, a former owner had at one time kept cockatoos and other parrots at liberty there.

Ranges of large aviaries were erected for the smaller birds as well as for parrakeets, on a site ideal for the purpose where there was plenty of sunshine, but protection from winds, while enclosures were made for cranes and strong fences erected to enclose large areas for deer, antelopes and wallabies. A stream running through the park was enlarged in places to form ponds for ducks, and these proved so successful that a number of the rarer species were kept successfully and many bred. Geese of the rarer kinds enjoyed a large range in the park.

The collection grew rapidly, the aviaries becoming well stocked with some of the greatest rarities such as, for instance, Renault's Ground Cuckoos, several kinds of plovers, Sun Bitterns, South African Bee-eaters, Crowned Pigeons, and so on. And he had many successes in breeding species never before bred in captivity.

Many of us remember the fine range of aviaries for parrakeets where one could see Queen Alexandras, Green-winged Kings, lutino



come again soon". Four days later he passed to his rest. I had known him intimately for over forty years.

To Mrs. Ezra and her two daughters our members will wish to convey their sincere sympathy.

DAVID SETH-SMITH.

\* \* \*

Nearly forty years ago, during the first world war, I met Alfred Ezra for the first time, through my old friend, the late Hubert Astley. We had been corresponding for some years, of course. Ezra was a pioneer in keeping nectar-feeding birds, and he had invented the formula, still in use to-day, of a mixture of honey, milk, and Mellin's food, to keep alive the lovely Sunbirds of India and, later on, those of Africa, as well as American Humming Birds. The late Marquis de Ségur, who kept in Paris a splendid collection of Humming Birds and Sunbirds and had let me have some in 1913-14, had then put me in touch with Ezra. Having the same tastes and interests we very soon became close friends, and this friendship grew up and became closer through the years.

Between the two wars I used to spend a week or two in England each month, when I was not travelling far from Europe. Most of my time in England was spent with Ezra, and his houses in London and at Foxwarren were almost as much home for me as was Clères, where he also often stayed. Together we used to visit friends and to see bird collections all over England and France. We went to bird-shows, we attended the meetings of zoological and ornithological clubs and societies, year after year. We sat together on the Council of the London Zoo. We practically owned in common our animals and birds, as we shared in the same collecting expeditions and we were constantly giving each other specimens we obtained or reared. Ezra's generosity and unselfishness were proverbial and I certainly have benefited from them more than anybody else. We thus had twenty years of delightful friendship and close association, including a marvellous trip to India in 1933-34. His elder brother, Sir David Ezra, then kept in his Calcutta house and garden an astonishing number of animals and birds, many of which, every year, found their way to Foxwarren and to Clères. A large part of the birds which I brought over from Indochina also went to Foxwarren. In those happy days both our collections were incredibly rich and interesting, full of rare species we had almost never dreamt to possess. Excellent collectors such as Messrs. Webb, Cordier, Frost, and Shaw-Mayer were constantly bringing us great rarities from all parts of the earth, many imported for the first time, and it is probable that never again will aviculture reach such a high level.



But the best things in this world come to an end. The 1939-1944 war entirely destroyed my collection in France, while that of Ezra had to be curtailed to a depressing degree. He, however, kept a number of birds and animals ; whatever he could feed. Even after the war his collection never approached its past standard. Age and illness, as well as other difficulties, had become an overwhelming handicap, but there are still a number of interesting specimens at Foxwarren to-day.

Until last year, the annual garden party he gave the Avicultural Society at Foxwarren was the highlight of the activities of its members. The generous hospitality of Mr. and Mrs. Ezra has been well known not only in England, but throughout the world. Many foreigners, particularly American and French aviculturists, were welcomed repeatedly in a way they will never forget.

With the passing away of Alfred Ezra, a happy, prosperous, and delightful era has gone. I probably will miss him more than anyone else, as he was my best friend. But my sorrow is shared by many others, not only in England, but in France, in the United States, and all over the world.

JEAN DELACOUR.

\* \* \*

When I learned from the July-August number of the AVICULTURAL MAGAZINE of the death of Mr. Alfred Ezra, President of the Avicultural Society, I was both sadly surprised and profoundly grieved.

Surprised, because though I had known for some time that his health was in a precarious state, all the more serious because of his advanced age, I held this great authority on ornithology and aviculture in such high esteem and admiration that I had come to regard him as having acquired a halo of immortality.

Profoundly grieved, because the death of someone of such noble character, endowed with great qualities of heart and mind, a great willingness to help, charming courtesy and a wide knowledge generously placed at the disposal of all, means for every ornithologist, for every aviculturist, the loss of an experienced counsellor who was also a good friend.

For all those who, throughout the world, are interested in breeding and rearing birds in captivity, the name of Alfred Ezra is, and will remain, as a symbol of what I should like to term "ornithological humanism", in the most noble sense of the word.

His memory will for ever remain in the hearts of those who, in varying degrees, share his ideals.

WALTER VAN DEN BERGH.  
Société Royale de Zoologie d'Anvers,  
Belgium.



After reading in the AVICULTURAL MAGAZINE about the death of Mr. Alfred Ezra, we have the honour to present our sincerest condolences on the loss of the Society's noble and much beloved President.

We ourselves will keep the kindest remembrances of this dear and most hospitable gentleman.

F. SIEWERTSZ VAN REESEMA.

IR. F. J. APPELMAN.

Diergaarde Blij-dorp,  
Rotterdam, Holland.

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A year ago, when representing the journal *Die Gefiederte Welt*, and thereby as spokesman of the majority of German aviculturists, I was able to attend the Diamond Jubilee of the Avicultural Society in London, it was a special pleasure to me to be introduced to Mr. Ezra, whose numerous important articles on aviculture had been known to me for a long time. Above all I remember his articles, ranging over thirty years, in which he clearly and concisely described, with expert knowledge, so many first breeding successes and valuable observations made in Foxwarren Park, and, in addition, accounts of his travels. This information was a substantial contribution to aviculture and thereby to the science of ornithology.

With feelings of sadness I now recall the Garden Party at Foxwarren Park to which Mr. Ezra invited the 150 participants of the Diamond Jubilee, on 19th June, 1954—the wonderful park with the distant view over the rolling southern country—the beautifully situated and richly filled aviaries—the generous hospitality of our host, and the way he took part in everything in spite of his physical difficulties and ill health.

The German aviculturists unite in paying a high tribute to the memory of Mr. Ezra and through me express to the Avicultural Society, with whom they have always felt most cordially linked, their heartfelt condolences.

JOACHIN STEINBACHER.

Editor *Die Gefiederte Welt*,  
Frankfurt-am-Main,  
Germany.

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I have learnt with the greatest regret of the loss of our President, Alfred Ezra. The distance at which I live and the circumstances of my life have prevented me from being in such close contact with him and appreciating his high qualities and his great interest in aviculture and birds as much as I should have liked. It is about thirty years since I was first in communication with his brother, Sir David Ezra, at the



time Sheriff of Calcutta, when he sent me several interesting species of Indian birds, among which were Black-breasted Francolins, several pairs of Jungle Bush Quail (*Perdica asiatica*) which have bred in my aviaries, and a female of the rare Malay Peacock Pheasant (*Polyplecton malacense*).

Each time that I have been to London I have had the pleasure of visiting the President of the Avicultural Society at his beautiful estate at Cobham. I remember in 1934 when he invited the members of the VIIth International Ornithological Congress, which was held at Oxford, to visit his collection of birds, we all admired the yellow and blue varieties of the Alexandrine Parrakeet and the Sarus Cranes nesting. The last time that I had the opportunity of visiting him, in 1952, when he was already ill, he courteously accompanied me in his electric chair to look at the Specifer Peafowl, and the Blue Eared Pheasants which he kept at liberty in his park with the Mandarin Ducks which flew about like wild birds. He derived much pleasure from his two flocks of Chukor Partridges which were bred in the park and used to come up to the house for food, just like domestic fowls.

I pay a sad and respectful tribute to his memory, and express my sincere condolences to Mrs. Ezra and his daughters, and also to his niece who acted as a link between her uncle and me by visiting me in Bologna whenever she was travelling on the Continent.

ALESSANDRO GHIGI,  
Bologna, Italy.

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## BREEDING THE YELLOW-CHEEKED CONURE

*(Aratinga pertinax chrysophrys)*

By A. A. PRESTWICH (Southgate, England)

During May and June, 1952, the trade offered a large number of parakeets, wrongly described as "St. Thomas's Conures"—in reality the Yellow-cheeked Conure. As far as can be judged this was a subspecies new to aviculture. A description is unnecessary as there is a Reid-Henry coloured plate in the July–August, 1954, number of the Magazine.

We obtained six birds in the hope that there would be at least one pair amongst them. Conures generally seem particularly difficult to sex as the colouring of both sexes is practically identical. I am sure that out of the breeding season it is quite wrong to suppose that because they sit in couples they are necessarily pairs. I have noticed this repeatedly with our Red-faced Lovebirds; two males or two females are perfectly happy together, even when they could, if they wished, find a companion of the opposite sex. So long as they have companionship they do not appear to be particular about its source.

From time to time we were offered these Conures in ones and twos, so that eventually we had no less than fifteen. Evidently this subspecies did not prove a particularly welcome newcomer to the aviaries of Great Britain. And probably with good reason. Our experience is that it is one of the less desirable members of its group, being very noisy, destructive, but boisterous rather than really quarrelsome—although on several occasions we have effected rescues only just in time after a sudden collective onslaught. Conure species appear to be great believers in lynch law.

In 1954 we had two couples in one of our 30 ft. flights and four couples in another. Numerous converted ammunition-boxes, internal measurements 15 inches high, base 9 inches by  $6\frac{1}{2}$  inches, containing turf and peat, hung at an angle of about  $30^\circ$  from vertical, hole facing north, were provided. We hoped the couples would resolve themselves into true pairs. The two couples did, in fact, prove to be pairs and nested, producing four and five eggs respectively. They failed to complete incubation; due, I believe, to the fact that both pairs regarded both nest-boxes as joint property and entered them indiscriminately.

The eight birds in the second aviary made no attempt to nest, nor did they evince any interest whatever in the nest-boxes. During the winter two of the eight died as the result of frozen feet and a third sustained a broken neck, possibly through a night fright. Thus hopes for 1955 were centred on two pairs in one aviary and five birds in the second.



Towards the middle of June one of the two proved hens appeared to be taking more than usual interest in one of the boxes, and it soon became evident that she really intended to nest. The first egg was laid on the 16th June, followed by four more on successive days: sitting commenced with the second egg. We believe the first hatched on 12th July, an incubation period of 25–26 days, and a second the next day; the remaining eggs had dried up.

The first young one, a fine, strong flyer, an exact replica of its parents, but a trifle less brightly coloured, left the nest on 30th August—nearly eleven weeks after the laying of the first egg. The second, a poor flyer with a marked shortage of feathers on its back, left the nest the next day, possibly somewhat prematurely.

We were very surprised this nesting attempt reached such a successful conclusion as the whole episode coincided with the three months of heatwave and drought. The hen was very restless while incubating; she never appeared to be taking her duties seriously and in the daytimes spent frequent periods looking out of the nest-hole. Later, during the intensely hot weather she sat and literally gasped. How the young ones survived in what must have been an inferno is little short of miraculous.

During the day the male spent most of the time warding off the intrusions of the second pair, and this he succeeded in doing with nothing worse than the loss of an occasional feather on one side or the other. At night he retired into the nest-box. When they first emerged the young ones were treated with a deal of hostility by the non-breeding pair, but their parents always had the situation well in hand, and within a day or so they were accepted.

The parents were not provided with any extras and only had their routine foods—seed mixture, soaked millet sprays and almost unlimited soft, sweet apple. Green food as available—chickweed, groundsel, sow thistle, spinach, etc.—was, as usual, supplied, but they did little more than just pick it over.

The five in the other aviary have spent much time in the various nest-boxes, but so far without result.

As described above, A. A. Prestwich has bred the Yellow-cheeked Conure (*Aratinga pertinax chrysophrys*). It is believed that this may be a first success.

Any member or reader knowing of a previous breeding of this subspecies in Great Britain or Northern Ireland is requested to communicate at once with the Hon. Secretary.

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## BREEDING OF THE OREGON TOWHEE

*(Pipilo maculatus oregonus)*

By C. M. PAYNE (Barford, Warwick, England)

During the Autumn of 1953 a friend in Canada sent me two pairs of Oregon Towhees (*Pipilo maculatus oregonus*) which arrived in beautiful condition. They were quite tame and confiding and quickly settled down to life in one of my aviaries. A description may not come amiss, particularly as the birds, although not unknown, are somewhat rare in this country.

*Male*.—Jet black above, including head, neck, and upper breast, cutting sharply across chest against pure white underparts. A broad bar of reddish-brown or bay along flanks. Wing-coverts and outer scapulars conspicuously spotted with white.

*Female*.—Similar, but the black greyish.

The birds are found in western North America. In Canada from south-eastern Manitoba and south Saskatchewan westward through southern British Columbia to the coast. It is a resident on the coast and migrant elsewhere.

The Towhees are very easy to feed, softbill mixture and seeds as given in a mixed collection suits them admirably.

During 1954 I could not spare a separate aviary for the Towhees and they had to share one with a pair of Nanday Conures which that year reared two young, also quite an unusual breeding success. Unfortunately, although the Towhees did not interfere with the Conures, the same cannot be said of the Conures, although they allowed the Towhees to build a nest and lay three eggs which appeared fertile, they one day upset the nest and broke the eggs ; I don't think out of spite, but rather from an inquisitive turn of mind.

During the early part of 1955 I moved my home and so had to construct new aviaries, and although I have in fact built quite a few, I still haven't enough—a common complaint. So the Towhees once again had to share, this time with Ring Ouzels, American Robins, Golden-crowned Sparrows, a Varied Thrush, and perhaps strangest of all, three pairs of Fischer's Lovebirds.

During early May my aviary attendant told me he had seen the hen Towhee carrying dried grasses about the aviary—these are the reports which I await eagerly each year—the first sight of a bird carrying nesting material about the aviary raises one's hopes, often to be dashed to the ground later on. I watched and saw the hen carrying some bents to a corner of the flight and on inspection I saw the first stages of a nest under construction. It was built directly on the floor and it may be noted that in 1954 the birds built about 18 inches from the ground in a clump of gorse. Both nests were built of grasses and bents with no lining, reminding one very much of



the nest of the Yellow Hammer, in fact, the birds appear to have quite a lot in common with Yellow Hammers—the same skulking among the lower bushes and brambles, and occasionally being seen on a dead branch, or other conspicuous perch. During the courtship the cock Towhee spreads his tail and shows more clearly the white band at the end. At the same time he puffs out his side feathers and shows off his beautiful spots. No mating was witnessed. Three eggs were laid at daily intervals and in due course, about fourteen days after incubation seriously began, there appeared one small Towhee which although light in skin was covered in blackish down. The difficulty then began; how to feed live food without all the other inmates devouring the gentles before the placid Towhees could get enough for their baby. I took the risk of putting a tin of gentles quite near the nest, hoping the Towhees would gain confidence and keep off the others and, within limits, the arrangement worked. The Towhees helped themselves for the youngster, and then the other birds, particularly the Varied Thrush, gorged on the remainder. After a few days my man began to throw a few gentles near the nest every time he passed the aviary—it can be said that the bird was reared entirely on gentles with a few earth-worms as an appetizer. The baby left the nest when fourteen days old and was self-supporting at one month; however, whether due to the type of food given during the early stages, or inherent in the birds, the chick's feet were imperfect in that the back claw was pushed forward and accordingly the youngster, although otherwise perfectly healthy, cannot perch properly.

There is really a second part to this breeding success. After this youngster left the nest the parents immediately set about preparing for another family. The original nest was repaired where necessary and in due course four eggs were laid; after fourteen days' incubation three young Towhees appeared. As the method of feeding had been successful when applied to the previous rearing we again placed a pot of gentles near the nest so that the Towhees could have the first helping. The young birds grew apace and indeed left the nest after twelve days. By this time they had tails about half an inch long, but were unable to fly any distance. However, this did not prove a handicap because the old birds found them out, wherever they had managed to land and gain a foothold, and simply filled them with gentles. These three babies, like their elder brother, which I now know him to be as he is already in the moult and the beautiful red sides with its attendant white spots are increasing in area daily, look like very dull baby Blackbirds; they have the same mottled breast, their overall colour being the same.

At the time of writing one youngster has passed on, having been found with a serious head wound, no doubt caused by one of the other inmates of the aviary. The remaining two are nearly self-



supporting, have quite long tails, and can get about the aviary without the slightest trouble. They are very confiding and I am thankful to say have no deformities like their elder brother.

Generally I find the birds most attractive, very placid, easy to feed, mix extremely well, and indeed appear to have no faults in a mixed aviary—something which cannot be said of many species.

As described above, C. M. Payne has bred the Oregon Towhee (*Pipilo maculatus oregonus*). It is believed that this may be a first success.

Any member or reader knowing of a previous breeding of this species in Great Britain or Northern Ireland is requested to communicate at once with the Hon. Secretary.

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## BREEDING THE CITRON-CRESTED COCKATOO

(*Kakatoe sulphurea citrino-cristata*)

By S. BRIAN KENDALL (Chertsey, Surrey, England)

The Citron-crested Cockatoo has always been a rare bird in captivity, presumably as a result of its limited distribution (Sumba Island), but during the temporary lifting of the ban on the importation of parrots in 1952–1953 a number reached this country. There are at present several odd males in different hands, but the hens are unfortunately very few.

I bought my pair of birds separately in the early part of 1953, and like Boosey (1953, 20) was very impressed by their extremely lovely colour combination of orange, palest lemon-yellow, and snow-white. In addition to their beautiful coloration they are also very attractive in shape, being about intermediate in size between the Dwarf Sulphur-crest (*K. parvula*) and the big Australian *K. galerita*, but without the rather "over-beaked" appearance of the Dwarf. Adults are readily sexed by the eye-colour, which is nearly black in the male and red-brown in the female. In addition, the male is typically slightly larger, has a considerably more massive bill and head, a markedly more richly coloured crest and, in the examples I have seen, more yellow on the breast and abdomen. Immatures probably always have dark eyes, but can be sexed by the more massive head and bill. There is as yet no information as to when the eye of the hen becomes red.

When first received my male was wing-clipped and wild. After a time he became steady, but has always remained truculent and I do not think he would ever have become really tame. By contrast the hen, which arrived with a small leg-ring and chain, was a delightfully tame and very lovable bird and it was a great temptation to keep



her so. Very soon after being introduced to the male, however, she lost all interest in her human friends and has remained as standoffish as her mate ever since.

From the beginning both birds displayed a great deal, the performance being most elaborate after a temporary separation or when danger was apprehended. The male usually commenced by hopping movements towards the female, raising and lowering the wings, the male often covering the female with his wings. This was followed by a complicated bowing and head to tail display combined with beak clicking. Mutual preening was never seen. Preening of any description does not seem to be associated with sexual display.

During the summer of 1953, soon after they arrived, the pair took some interest both in a grandfather clock and in a grape-barrel nest-box, but nothing materialized. During the winter of 1953-54 they remained in an open wire flight with an open fronted shelter. My impression is that they are exceedingly hardy. In 1954 nesting barrels were again cleaned out, starting at the end of March and continuing until June or July. In August of 1954 the birds had a moult which replaced all the clipped feathers, and they really began to look like the lovely things they are.

In 1955 nest-boxes were put into the 35 ft. flight in the first week of April: a grandfather clock facing north and a 15 gallon barrel, on end, facing south. By 9th April the male was in the barrel, the pair was seen copulating on 25th April, and during the week ending 14th May both birds were in the barrel a good deal, sometimes together. About this time there was a suggestion of the development of an egg-pouch and after a day or so the hen looked definitely pregnant. On the night of 18th May the hen remained in the barrel. I believe this was the date of the first egg, and thereafter incubation was evidently occurring. The hen seemed to do most of the serious sitting, although the cock spent a good deal of the day in the barrel, coming out, however, if anything interested him, and roosting out at night. Food was occasionally taken into the box, and once or twice green leaves, possibly for nest lining. On 16th June young were heard, indicating an incubation period of about 28 days. Both parents were in the box for the first time, on the night of the 18th, a routine which was continued until the young fledged. Particularly in the early days of rearing the young were very noisy; a rapid "Eek-eek-eek" presumably being the feeding note. In addition, there were low grumbles and querulous whines.

The Citron-crests proved model parents, the young being very rarely left by both parents even for the shortest period of time, and even if the barrel had been accessible I do not think it would have been possible to record progress without gross disturbance. I did in fact manage to contain my interest until 28th July, when I was



able to look, with the aid of an electric torch, through the wires of the aviary and into the nest hole. One young bird was fully feathered and with a well developed orange crest. The parent in the barrel appeared to be covering something else. On 3rd August I was able to confirm that a second, considerably less mature young bird, was alive.

The young were reported by members of my family to have commenced appearing at the nest hole from 28th July, but it was rarely possible to obtain more than a fleeting glimpse of a bird in the shadows of the barrel. One young one finally emerged on 22nd August and both were out on the 26th. Within a day or so they were flying strongly and they show every sign of developing into magnificent specimens. Both have dark eyes, but they appear to be a true pair.

On 27th August all the birds roosted out in the open flight and the young have never returned to the barrel.

Citron-crests are very easy to feed. Mine get a staple diet of mixed chicken-corn which varies somewhat according to the whim of the merchant, but essentially contains wheat, oats, barley, and cracked maize. During the winter they receive sunflower seed two or three times a week. During the breeding season they get unlimited supplies of their usual seeds together with as much sunflower as they want. In the morning they are given hard-boiled egg and bread-crumbs, as supplied to canaries, and at night bread and milk and assorted fruit (usually apple or plums). They are not very fond of green food, which is, however, offered occasionally, but they adore sweet-corn and hawthorn-berries in season. Sometimes I give small quantities of other seeds, such as mixed canary seed, but it is difficult to be sure just what they eat. I do not use cod-liver oil, but give Vitamins A and D in another form during the dark months. I do not use any of the extraordinary "aid" mixtures with which bird-keepers are being bombarded nowadays.

At the time of writing (1st September), the young are still with the parents. They are very strong on the wing, but I doubt if they are feeding themselves. I was able to examine the nesting barrel to-day for the first time and was unable to find any evidence of infertile eggs or dead young, so it appears as if the record should read laid—2, hatched—2, reared—2.

One year's breeding does not, of course, necessarily mean that the species will be easy to establish in aviaries in Britain, but all the evidence suggests that the Citron-crest should thrive at least as well as the Leadbeater's Cockatoo. As the likelihood of further importations seems remote, it is to be hoped that the very few hens which are available will be used to the best advantage.

#### REFERENCE

BOOSEY, E. J., 1953, *A.M.* 59 (1), 20.



As described above, S. B. Kendall has bred the Citron-crested Cockatoo (*Kakatoe sulphurea citrino-cristata*). It is believed that this may be a first success.

Any member or reader knowing of a previous breeding of this species in Great Britain or Northern Ireland is requested to communicate at once with the Hon. Secretary.

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## THE FIRST BREEDING IN CONFINEMENT OF THE BORNEO, OR BLACK, MANNIKIN (*UROLONCHA FUSCANS*)

By WALTHER LANGBERG (Copenhagen, Denmark)

The Black Mannikin (*Uroloncha fuscans*) from Borneo is very rarely imported. Owing to its very sombre colour the bird would hardly gain a great popularity among aviculturists. Colour description: Entirely uniform blackish chocolate, somewhat obscurely mottled with browner centres to the feathers, quills and tail feathers black, iris brown. Total length 4.2 inches, culmen 0.45, wing 1.9, tail 1.45, tarsus 0.5.

In December, 1939, I obtained five birds of this species from Mr. C. af Enehjelm, then living in Copenhagen. Early in 1939 Mr. W. R. Partridge, of Southmore Foreign Bird Farm, had imported a small consignment, and all were—as far as I know—secured by Mr. Enehjelm. When joining the Forces in Finland in December, he parted with his entire collection and, among other birds, I got the Black Mannikins.

The birds, which were all ringed with coloured rings, were put in a large cage for observation and sexing, and, after some time, they turned out to be three cocks and two hens. One pair was put in a box cage 30 inches long, with a basket nest. The result was, however, very annoying, as the hen was chased by the cock so persistently that I had to take her out of the cage, and later she died. The cock was then mated to a hen Striated Mannikin and a young hybrid, somewhat lighter in colour than the Borneo Mannikin, was bred.

In January, 1940, I put the other pair in an indoor flight, approximately 8 feet long, 5 feet high, and 3½ feet wide, with a window facing south. No other birds were in the flight, which was provided with large willow branches with leaves on, one Harzer wicker cage, and three basket nests. One of the last-named, placed at a height of some 7 feet and with the open side facing the window, took their fancy and a nest of coco-nut fibres and fine hay was built in a few days.

I cannot give the exact dates of laying and sitting, as I did not



enter the flight, in order not to disturb the birds. At the beginning of March, I heard a sound resembling that of young Bengalese being fed. The sound became stronger day by day and I was sure there were several young ones in the nest. On 17th March four fully feathered youngsters left the nest. They resembled the parents, except that the bill was entirely black. Already, after three to four days, the youngsters started to feed and, after a fortnight, they were independent. In the course of about a month the white rims of the bill disappeared and the lower mandible got the light-grey colour of the adult birds. Later on several youngsters were bred by the parents, and eggs were also given to Bengalese, which brought up several more.

The birds were fed on white and Indian millet, canary seed, and condition seed. A soft food, consisting of hard-boiled egg and biscuit and sprouted millet and canary seed, was also given regularly.

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## FIRST BREEDING OF THE COMMON MOTMOT (*MOMOTUS MOMOTA*) IN CAPTIVITY

By ROLAND W. HAWKINS (Pittsburgh, Pa., U.S.A.)

Since the opening of the new Conservatory-Aviary in Pittsburgh on 10th August, 1952, bird-nesting activities have been numerous, with young broods being successfully raised by several species. The number of breeding successes has been severely curbed by the problem of not having enough females for the predominantly male population. This situation is being corrected at an exasperatingly slow pace, due to the poor supply of female birds on the market. Among the species that have reared young successfully are: *Rhamphocelus carbo*, Maroon Tanager; *Molpastes cafer*, Red-vented Bulbul; *Copsychus malabaricus*, Shama Thrush; *Turdus migratorius*, Eastern Robin; *Richmondia cardinalis*, Eastern Cardinal; and *Momotus momota*, Motmot. Many of the unmated species have built nests, a good indication that, when the aviary population is properly paired, our breeding results will show a graphic rise. Other species which are nesting at this time are: *Priotelus temnurus*, Cuban Trogon; *Dinemellia dinemelli*, Dinemellis's Weaver; and *Garrulax leucolophus*, White-crested Jay-Thrush.

For the present, we are most excited with the breeding success of our Motmots. Both the male and female belong to the *Momotus momota* group, but are distinctly subspecies. This gives us a hybrid mating between two geographical races. It is most unfortunate that we have no reliable information concerning their place of origin, as this would enable us to make accurate subspecific determination.





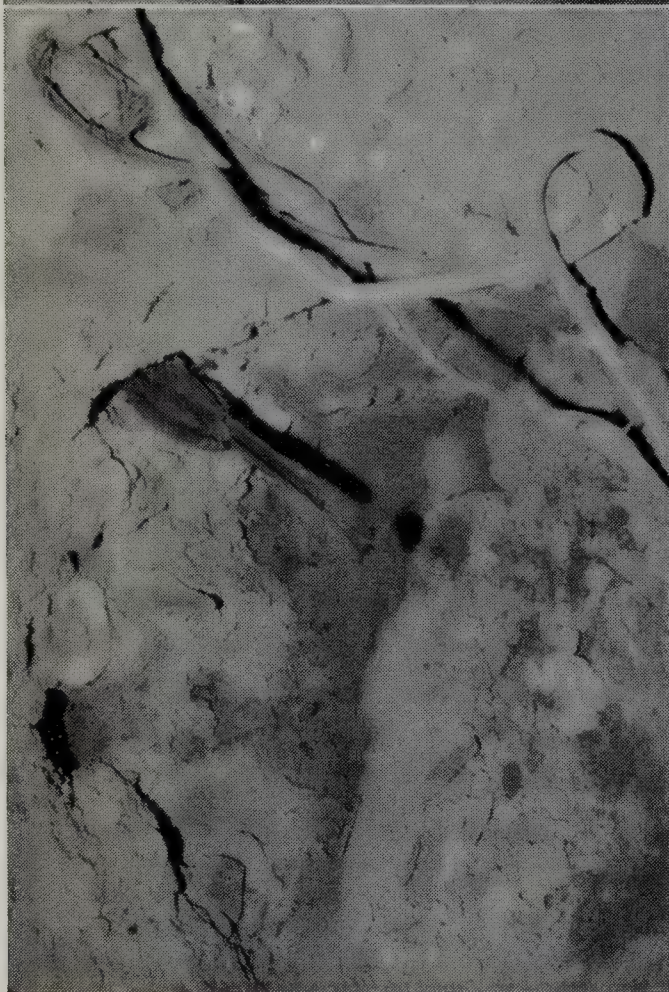
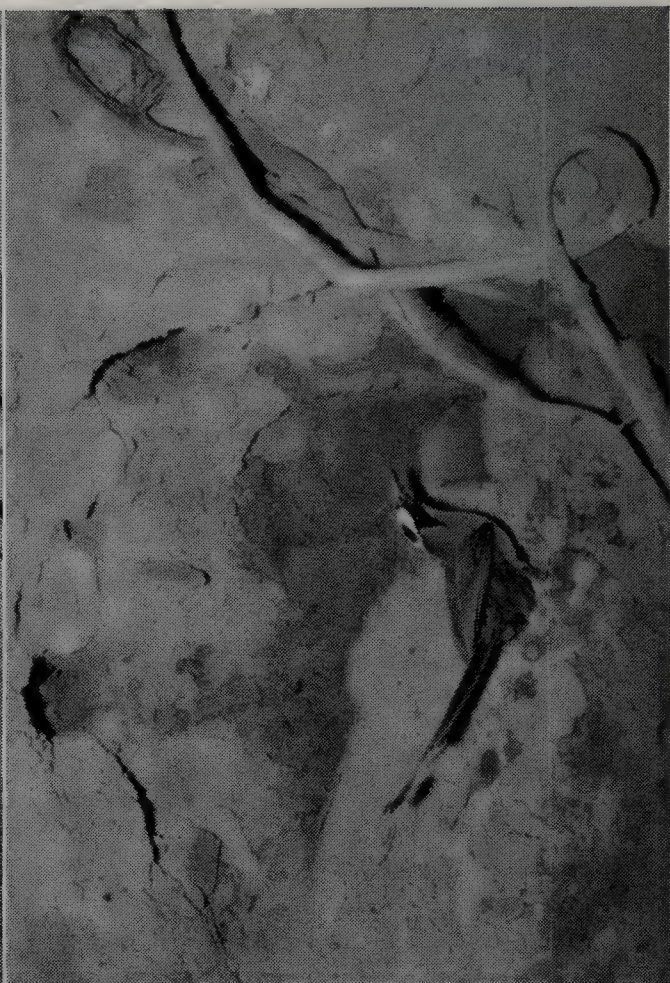
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NESTING BURROW UNDER BRIDGE.

face p. 230.







As a matter of general interest, the male is several inches larger and much darker coloured than the female.

### *Mating and Courtship*

The first indications of mating was observed on 1st February, when the male bird was released into the room containing two females. Within minutes the two females began vying for the attentions of the larger male; first one, then the other, would perch alongside the male, at which time their long tails began twitching rapidly from side to side. Their throaty, flute-like notes were clearly audible as conversation ensued between the birds. On 2nd February the male apparently favoured one of the arduous females, for together they attacked with relentless savagery the other female, driving her to seek shelter in areas where the vegetation was thick enough to afford protection. Fearing for her life, I removed the outcast bird and placed her in another room. Before the male was introduced to the room the two females were always friendly, never showing any signs of hostility towards each other. This period of friendship lasted two full years.

With the competition of the other female removed, courtship activities began in earnest. The male became a most attentive suitor showing his affections by carrying various choice food morsels to the female; among these were mealworms, earthworms, fish, crayfish, roach, and pieces of raw ground meat. At times he would approach the female with a leaf or small stick in his bill. These visits were frequent and, when the two birds were perched near each other, a pendant tail-wagging party would take place. While the tails were being switched the low, soft-syllabled, flute-like notes could be heard. At times these notes were barely audible, while at other times they were strong enough to be heard a distance of fifty feet. The main display performance of the male was the deliberate swinging movement of the tail being swung sharply from side to side. These movements of the tail were made for several minutes at a time and at a more rapid rate than is normally apparent.

### *Nesting*

On 7th February the Motmots were observed attempting to tunnel in a bank where the tufa rock face had been removed to make room for a planting change in one corner of the room. Both male and female would take their turns at digging, although the male spent longer periods of time in the excavating work. As this bank was to be re-walled with tufa rock at the completion of the planting, a new nesting site had to be provided. A pit was dug under the bridge which runs through the centre of the room, resulting in a bank 4 feet in depth and 5 feet in width. To encourage the birds to adopt this



new site, I started two holes with the aid of a crowbar, digging them back to a depth of 1 foot. On 10th February, both birds were seen digging in one of the holes. As this provisional bank was shallow, I removed the freshly dug earth at the bottom of the hole each day. The digging was done entirely with the bill and the soil was pushed out between the feet at a most remarkable rate. The excavation work was sporadic and the digging was confined to the early morning hours. On 2nd March the work was apparently finished for no fresh earth was evident beneath the tunnel entrance. At this time all courtship demonstrations on the part of the male had ceased. On 30th March the female was seen leaving the nesting tunnel. For the next two weeks no activity was observed around the nest by either bird. On 15th April the male was seen copulating with the female for the first time. The female was seldom seen during the next seventeen days and it was evident that incubation was under way. The male never entered the nest to help with the incubation, but did carry food to the female on the nest regularly.

#### *Feeding of Young*

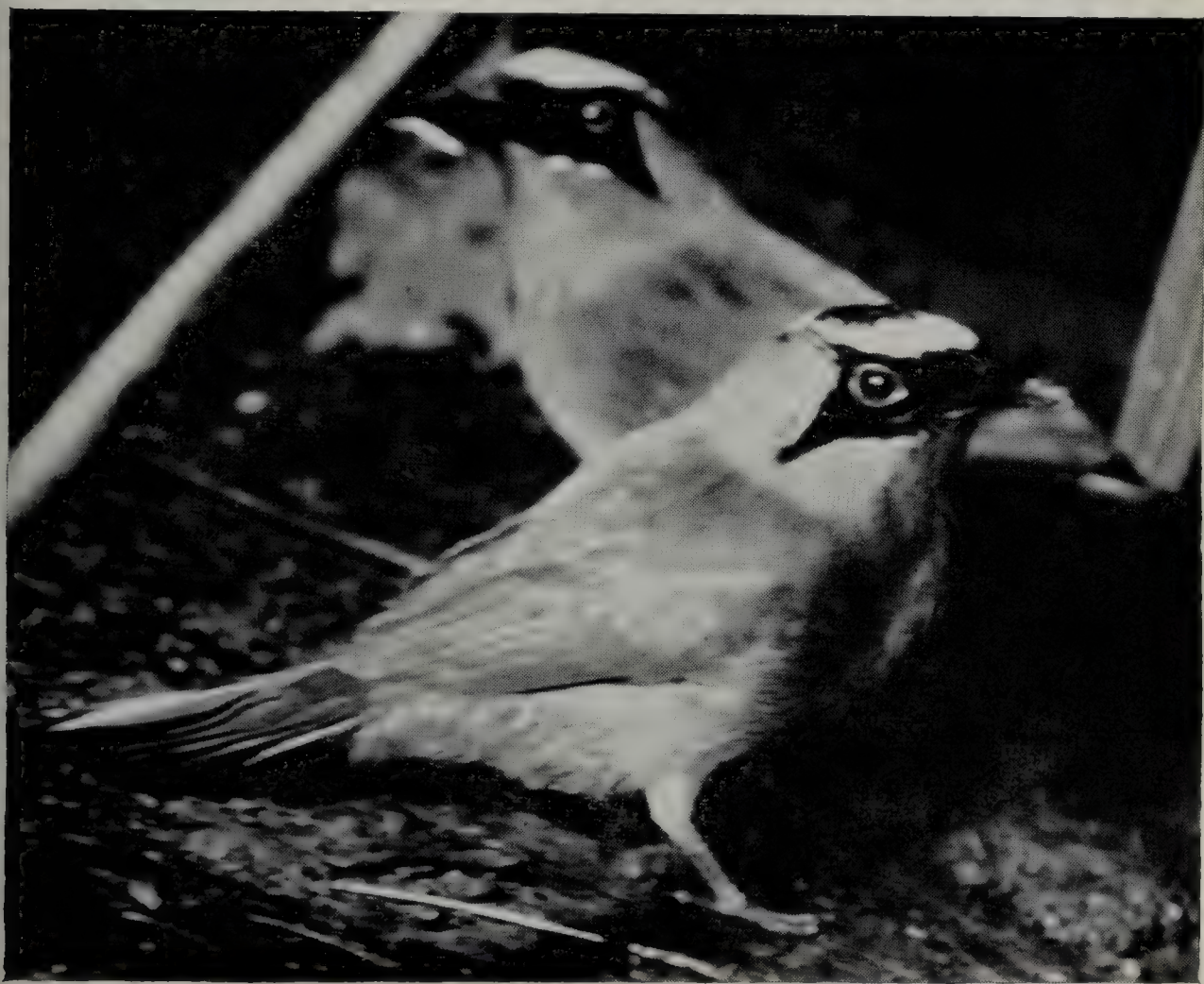
The first evidence of young came on 3rd May, when both adults were observed carrying food to the nest tunnel. Close observation was maintained over hourly periods taken at different times during the day from 8 a.m. to 4 p.m. These observations showed the male to be the main provider, making ten trips to the female's one; this was probably due to the female's shyness. The male, being finger-tame, was not alarmed at anyone watching his activities. Feeding times showed an average of two trips an hour during the day, with a dozen trips or more when the birds were fed in the morning. On the basis of two evening observations, the female brooded the young during the night. The food carried to the young was quite varied, and outside of cockroaches and mice (*Mus musculus*), all their food was provided for them. This consisted of mealworms, earthworms, smelt ground raw meat, shrimp, crayfish, minnows, and mixed food formulas.

All live food was beaten against a rock or tree limb and killed before being fed to the young, with one exception, mealworms, which were fed alive. The adults would not feed the young any one kind of food over a period of time, but would purposely vary the aforementioned foods. One trip would be a mealworm, the next an earthworm, then possibly a piece of meat or fish, etc. From observation it was noted that the male bird never made more than three trips with any one kind of food. This habit was consistent throughout the entire feeding programme of the young in the burrow. The male always left the nest-hole tail first, while the female always emerged head first. The female soon lost the racket tip of her tail from turning





YOUNG *MOMOTUS MOMOTA* FIRST DAY OUT OF NESTING BURROW (MAY 30). (Note large eyes, short bill, and absence of black spot on breast.)



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MALE ABOUT TO FEED YOUNG WITH MEALWORM. (JUNE 1.)

To face p. 232.





YOUNG AT FEEDING TRAY, JUNE 19. (At this time the young are completely independent of the parent birds.)



Copyright]

To face p. 233

YOUNG, JUNE 20. (Note spot on breast.)

[R. W. Hawkins



in the tunnel, whereas the male retained his due to his custom of backing out. On the morning of 30th May, two bright-eyed, immaculately clean young Motmots put in their first aviary appearance. The most striking part of the young birds was their short bills and tails and, due to the short bill, their eyes seemed very large. The tail rectrices showed the characteristic weakening of the barbules at the shaft. In body, size, and colour they resemble the adults. The wings were fully developed and they experienced no difficulty in flying. Both young were exceedingly tame and permitted one to approach within a few feet before taking alarm and flying.

### *Defence of Young*

On two separate occasions I was fortunate enough to witness the male attacking and driving away from the nesting area a large wood turtle. His attack would begin by flying down on the ground, confronting the advancing turtle with wings outspread and feathers puffed out. This was apparently to bluff the turtle into retreating. When this failed to halt the advance, he quickly flew in and delivered a hard thrust with his bill to the reptile's head. With two of these blows the turtle wasted no time in beating a hasty retreat to the sanctuary of the pool. Whenever the Cock-of-the-Rock (*Rupicola peruviana*) appeared anywhere near the young, the male Motmot attacked the larger bird with such determination that the Cock-of-the-Rock would quickly leave the vicinity. The female Motmot was seen chasing smaller birds away from the young on several occasions.

It had been the writer's intention to expose the nesting tunnel for a cross-section photograph to include with this article. This decision was changed when the male was observed copulating with the female and renewing his mating performance on 2nd June. The female was observed entering the nesting tunnel and, to all appearances, a second nesting is in progress.

By 20th June the young were completely independent of their parents for food. At this time the adults paid them no attention and were proceeding with their second nesting.

\* \* \*

## BUDGERIGARS AT LIBERTY

By ROSEMARY UPTON (Ingatestone, Essex, England)

Having enjoyed a garden decorated with Budgerigars for just over three years, I was delighted to know that at the London Zoo a liberty aviary has been opened by the Duke of Bedford. It is a memorial to his father, the pioneer of homing budgerigars.

The general plan for managing an aviary of these birds has been



described by the late Duke of Bedford in his articles in the AVICULTURAL MAGAZINE, and is all in the booklet *Homing Budgerigars*, but it might be of interest if I add just a little that I have learnt from my experience with these liberty birds.

First, I know that one must aim at flying not less than two hundred birds, and in the winter try and manage about three hundred. Half a dozen birds here and there make no show at all ; it is the flock of fifty or more flying round which leaves people open-mouthed and speechless ! And to have a large number one must hang the nest-boxes in three tiers, unless of course one intends building an aviary like a miniature Albert Hall. Boxes placed at different levels do, however, lead to differences of opinion between some birds. Amongst the ladies there is the complete snob who cannot live in a basement flat, but must have a top floor penthouse, and there is probably not one of them vacant. Into battle she goes with beak and claws, and some poor bird will be evicted unwillingly from her home. That trouble maker must be caught and put into Holloway Prison, which is a small aviary standing at some distance from the liberty one ; there she must repent with other wicked women. The free-flying cock birds will visit them and gurgle sweet nothings through the wire netting, which helps to reform them, and they are returned later to the big aviary, only too willing to settle down to a peaceful married life.

Some birds breed in the winter, but I find fewer do so each year, and this is obviously all to the good. Those that insist, I limit to two eggs. During the summer, the clutches are not limited, and through colour ringing a number of birds, I have proved that they do not breed so young, as when kept in an enclosed aviary.

Every day the trap is taken out and the birds given their freedom, though I do not do so, if there is a fog or a snowfall, but they have been overtaken by both, at various times, with no ill-effects, but there was an ugly rush for " Home ".

All millet and canary seed is dressed with cod liver oil in the winter, and the birds have as many oats as they require. I never give frosted green food, though they help themselves to plenty of frosted grass ! In very hard weather, the bowl of drinking water is stood over a tin containing a night light. When grass seeds are plentiful in the summer, the seed bill drops considerably, the birds will wander in flocks as far away as half a mile in search of this food.

On the sides of the Woburn Aviary which is now at Whipsnade, there were entrance funnels, to help young birds to find their way home. I have never pampered them in this way, sooner or later the one and only entrance will be discovered.

I only hope the liberty aviary at the Zoo is as successful as my own, and one or two others I know of, as this great idea of giving Budgerigars their freedom came from the late Duke of Bedford.



## STUDIES ON GREAT CRESTED GREBES

By K. E. L. SIMMONS (Tilehurst, Reading, England)

Illustrated by Robert Gillmor

*(Continued from page 201)*

## 5. PLATFORM-BEHAVIOUR

*From Selous's observations, the actions and ceremonies connected with coition are quite elaborate—almost of the same order of elaboration as the courtship-ceremonies, though the two rituals are completely independent and appear to have developed along quite different lines.*

Huxley, 1914 : 502.

In spite of their elaborateness, the courtship-ceremonies of the Great Crested Grebe are not, strictly speaking, *fundamental* sexual activities, unconnected as they are with the ritual surrounding copulation. As was discussed previously, their primary function lies elsewhere in the realm of appeasement rather than in that of sexual stimulation. Now the picture may be completed, for those truly fundamental activities of soliciting and copulation will in turn be described and briefly discussed in this section, together with the other aspect of the grebe's platform-behaviour—nest-building and the topics connected with it. Treatment of the parental-behaviour (the long routine of incubation and the raising of the young) will be the subject of the final instalment.

No detailed description of what I have called the "platform-behaviour" has yet appeared in the literature, and this account is based mainly on my own material. At the turn of the century Selous published some valuable observations in diary-form, which were later usefully summarized, clarified, analysed, and slightly amplified by Huxley in 1914. Further notes (and some Continental references) are given by Hanzák whose paper, though extending our knowledge somewhat, also contains some inaccuracies.

*Narrative*

Before the behaviour is described in more detail, a general picture of the sequence of activities and of the routine at such times may be traced.

*Normal Platform-behaviour*

Most pairs of Great Crested Grebes search for and select a nest site after a variable period of courtship in open water (see p. 132 and following). On well-populated lakes this site prospecting may lead the birds into occupied territories from which they are driven, but



finally the pair usually manages to find an unclaimed spot or, more rarely, to annexe part of an existing territory. While the two grebes may begin to build a platform industriously on the very first day that they have established themselves, often this initial work is of low intensity only, especially if the couple is still courting well as is often the case. Indeed, if relations with neighbours and intruders are strained, and if the pair has had only a short courtship period previously (see p. 196), the first days of the platform-cycle may be largely taken up with such courtship and very little serious building done. Soon, however, more purposive construction may begin. The nest-platform can assume appreciable proportions in quite a short time, as Huxley notes, and as soon as it does become solid enough to support the weight of a grebe and lies not too far below the surface of the water, soliciting may start, perhaps incompletely and irregularly at first. Both male and female ascend the platform, one at a time, to display. As soon as such soliciting becomes regular, the building tempo slows down for the time being and a day or so later coition itself is likely to commence. A period of intense sexual activity on the platform follows and then declines as egg-laying nears. During this time of reduced soliciting and copulation nest-building intensifies again. Also, as in the first good period of building, the birds' attention may not be confined to a single structure. For several days, too, before the appearance of the eggs, male and female sit irregularly on the empty nest-platform. At first this "premature-incubation" merely follows periods of soliciting when sexual impulses are weak in at least one of the partners. Later, during the period of declining sexual activity, the grebes may definitely ascend the platform just to sit on it, extended "spells-on" usually occurring when the mate is totally absent. There is of course no regular alternation of the empty nest, as when true incubation has started, and the shifts average much shorter, generally not exceeding 10–15 minutes, though one female sat for as long as 70 minutes. Such behaviour is obviously an expression of the brooding urge though grebes sitting on the empty nest perform none of those activities done later in relation to the eggs—such as opening the brood-patch, shuffling-down, and so on. Coition continues infrequently during the laying period.

During these platform-stages, and it is especially noticeable in the period just before egg-laying, the male and female take it in turns to leave the Type B nesting-territory, that has no immediate access to open water, to feed away from it, leaving one of them alone in the nest area while the other is gone. A sexually responsive female grebe sometimes advertises for her mate if he is overdue. Very occasionally both partners are absent at the same time, but such a procedure has obvious disadvantages, for it leaves the territory unguarded from intruders and expanding neighbours. In those territories with



immediate access to free water, and in Type A territories with their defended feeding water, such a routine is less conspicuous of course.

Such, then, are the barebones of normal platform routine. The shortest period known to me for the duration of these stages of the cycle is about 8 days (Pair C in 1948) and a week to a fortnight would seem to be the rule in those pairs which start their cycles at the most suitable time of the year—from approximately April onwards. Some pairs, however, start early. In 1949 one couple had already reached the premature-incubation stage by the very beginning of January, and in mild winters platform-behaviour is quite regular locally in a minority of (? older) pairs from mid-January onwards. Cold spells, and later wet ones, interfere with the cycles of such early birds and prolong the platform-stages for as much as 2–3 months, the grebes concerned even at times having to perform weather-movements to ice-clear waters, perhaps the sea. The first eggs never appear, locally, earlier than mid-March.

#### *Activity at "Substitute" Sites*

From the regular to the irregular. The behaviour of those grebe pairs that, although at a relatively high sexual pitch, do not manage to establish themselves, at least initially, is full of interest. They trespass furtively into the territories of other pairs and, if possible, start to build or to use existing platforms for their brief, snatched sessions of sexual behaviour, until observed and driven out by the rightful owners. Such birds are the most likely of all grebes to employ "substitute" platforms in places unoccupied by others and hardly suitable for breeding. These substitute-sites are usually places such as small hummocks of gravel, the overwashed and sloping sides of banks, islets or sand-spits, and so on, all of which give support to the soliciting grebe. One bird even ascended a floating plank of wood to display. Occasional breeding is attempted at such places and young sometimes reared. The classical case was recorded at Burghfield in 1949. The pair in question (S 49) was first seen soliciting in the shallow water of the sand-spit on 4th April, and platform-behaviour continued until 13th April, except that *no building* of any sort occurred. On the 14th of the month an egg was laid on the bare sand (premature-incubation having started a week before) and only then did the grebes start to gather weed and place it about the egg. The birds were robbed by some unknown predator (probably louts) and deserted the site. The year previous, at the old Theale gravel-pits (Berkshire), a pair of grebes successfully reared three young from a clutch of eggs laid on bare gravel on an islet. Again only a very small amount of weed was present. A similar record of a very scanty nest on an islet comes from Wilstone Reservoir (Report on Birds observed in Hertfordshire in 1946). This, together with the others, seems to suggest that, where



these substitute-sites are sufficiently raised to form a pre-existing, artificial platform, the birds do not build there, but are "content" to leave out the nest-building stage of their cycle prior to egg-laying, if highly worked-up sexually.

### *The Nest-platform*

Selous and Huxley drew a sharp distinction between the casually built "pairing platform" (used more or less exclusively for soliciting and copulation) and the "true nest" (used eventually for breeding). Such a distinction, though useful, does not always exist. Some pairs only build one structure which serves all purposes. Others may construct as many as three and then employ any one of them to hold the eggs. As Hartley (1937) says of the Dabchick: "That there is no initial psychological difference between the true nest and the small weed-platform is suggested by the fact that the 'invitation pose' and copulation take place on both." Huxley himself states that "the birds may build several incomplete nests or platforms before one finally chosen to be the true nest is finished and laid in". It all amounts to the fact that a "pairing platform" is a potential nest that for some reason has not been used eventually. At times the birds have obviously not been selective enough in their first building spells and have chosen an imperfect site which is suitable for mating, but not for breeding. Such is the case with the occasional "free-floating" platforms.

In this paper I have used the names "nest", "platform", and "nest-platform" rather indiscriminately, though tending to use the first to denote a true nest. Of the three, "nest-platform" is the most useful as a general term.

### *The Nest Site*

Grebes build in a variety of places but "in general nests are placed in sedges and reeds at the water's edge" (*The Great Crested Grebe Inquiry*, 1931). Most of the nests that I have found in Berkshire, Hertfordshire, and Wiltshire have been tethered to waterside vegetation of some sort (*Phragmites*, *Typha*, *Persicaria*, *Salix*, etc.), with at least part of the structure awash, for the grebe likes to swim right up to the base of its nest. The nest is often hidden in cover, more near the open water than the bank if possible, but exposed ones are by no means rare, some being supported by underwater vegetation or built up from the bottom in very shallow water and so on. One very memorable nest, found at Braydon Pond (Wiltshire) in 1944, was partly fixed to a slim wooden stake and partly floating in a depth of well over 5 feet. To reach it, I waded until the water was up to my chin. At Burghfield, flooded willow clumps and trailing willow branches are much favoured.



Grebes' nests are liable to suffer from the opposite dangers of flooding and stranding, but the birds do not readily desert in such circumstances. Flooding is most likely to be disastrous for the eggs when the water level rises during rough weather, especially in the laying period and early days of incubation when some nests tend to be less raised above the surface than later. Like other aquatic species, grebes build up the nest when their sitting routine has been upset by water splashing up over the rim: they get "restless", rearrange material, and get down from the nest to add fresh cargoes of weed. Locally, most grebes' nests are situated not far from relatively deep water, so that when stranded after spells of drought they are seldom left so completely high and dry that the birds cannot manage to clamber clumsily up to take turn on the eggs.

### *Selecting the Site*

The male and female often investigate possible sites together, swimming purposively from place to place, perhaps one bird leading the way. Sometimes each goes its own way for a while and the female is likely to advertise for her mate when separated from him. As already stated on page 134, the "choice" of a site "involves entering likely cover, commencing to build there, and displaying, resting, and preening in the immediate vicinity". Either sex may initially prospect a particular site but the presence and activity of *both* grebes there ensures its final adoption. Once the pair has settled down in the territory further platforms may appear, again usually the result of joint participation of the two sexes. Sometimes the male, and apparently *only* he, may start a platform on his own in addition (as Selous also found). I am certain, however, that these so-called "cock platforms" are never entirely the sole affair of the male for long, the female collaborating with him if he persists in building there, and have no deep significance as indicated by Huxley—"The mysterious platforms of the cock remain as one of the few truly secondary sexual characters of the species." Rather, multiple nest-building of this sort is merely the result of the male's apparently greater urge to build than his mate's, a difference of degree not of kind. The nest-platform that will finally contain the eggs is that one which, while not necessarily the last to be made, is the last to have joint construction done at it by male and female before the onset of ovulation.

### *Building*

Great Crested Grebes are efficient if not very elaborate nest-builders. Their general scheme of construction, in spells of persistent building, is to bring as much material as possible in a short time and to pile it up for later arrangement. This results in the speedy appearance of a



platform for sexual purposes. Both sexes work hard, the male seeming, in my experience, to take the larger overall share as is implied also by the *Grebe Inquiry*. Reporting on Selous's observations, Huxley says on this point: "As to the part played in nest-building by cock and hen respectively, Selous says in regard to this pair: 'The interest taken by the male in the nest has been very marked throughout, more so even—in appearance, at any rate—than that of the female, though in the actual building of it she has been yet more efficient than he.' " Hanzák, however, states that the female does most of the work at nest-platforms in cover and the male most on the free-floating ones, which are never used as true nests. None of these totally untethered nest-platforms have ever been made at Burghfield though the *Grebe Inquiry* mentions that "At Stoke Newington Reservoir (Middlesex) a nest was to be seen gently wandering all round the reservoir in 1929".

There are five main activities in nest-building: the collecting, transporting, depositing, arranging, and trampling down of material. Many nests are made predominantly of sodden and decayed sunken weed, the same "dark ribbony" stuff used in the weed-trick display. Fresher green leaves and stalks of aquatic plants are also employed, and small dead waterlogged branches of up to about two feet in length are chiefly, but not entirely, found in the base of the platform below water. If the predominant material is anything else besides sodden weed the nest still depends on that to bind the rest together. This weed and many of the other items are obtained from below the surface by diving, but some stuff, especially growing water-plants, is broken off from the parent source if not too securely attached. One male grebe was seen to pull grass from the bank and take that to the nest. Material is collected as near to the site as possible, often mainly from within a few feet of it. Some birds have to travel and bring it from as much as 50 yards or more away; this is unusual unless the immediate nest area is devoid of any suitable material. Only single branches are carried at a time, held by the end and trailed, floating, behind the grebe as it swims back to the platform. On the other hand, large cargoes of decayed weed, so thick that the bill shape is obscured, may be brought at once. After the initial foraging dives, the birds always journey across the surface on their way to deposit the material, never diving along *en route* as they may when bringing food for the young. Selous recorded 74 visits in 40 minutes from the pair he watched in 1900, the female then continuing a little on her own while the male, soon after, took 28 loads of stuff to his "own" platform. Next day the two birds brought 100 cargoes in 50 minutes. In my experience, at peaks of building activity, a visiting rate of one load a minute by each grebe may be maintained for some time. The birds are able to make this speed because their building method is simple and rapid, as mentioned above.





Carrying a branch to the nest-platform.



A large cargo of weed.



Depositing a load of weed.

When the grebe reaches the site, it immediately deposits its load from the water, usually on to the slope of the platform. If very active in collecting, it will then move quickly away to forage anew. There is a special "pushing" movement used in laying down damp weed—a slight, upward, shovelling quiver of the bill (rather like that of a dog covering a bone with earth). This is analogous with the side-to-side



fixing movements of many other groups that build mainly with more rigid materials, needing to be woven if fine (e.g. many small passerine birds), or at least interlocked if coarser (e.g. doves, lovebirds, hawks).

Sometimes one of the pair will ascend the platform especially to arrange the material there. However, this is usually done during breaks in soliciting or during spells of premature-incubation, and so on. Standing or sitting, the grebe picks up a piece of weed from



Arranging material.

here and lays it there. It is in this way, mainly, that the structure grows from a rather shapeless pile of weed into a more functional nest, with a central depression for the eggs. This last is formed by the bird piling up weed round itself as it sits. The platform is given solidity chiefly by the incidental movements of the heavy-tooted birds but occasionally, before any eggs are present, deliberate trampling is done with the large lobed toes. Huxley mentions this rather graphically: "Lying in a punt in the reeds, I have heard this trampling, first on one side, then on the other—squelch, squelch, squelch—sounds of some creature trampling heavily with alternate feet on something sodden."

#### *Soliciting and Copulation*

As soon as the platform is substantial enough, and so long as at least one of the grebe couple is really sexually inclined, the birds begin to solicit on it. Both sexes "invite" and "rear" (see below), at first the male perhaps as frequently as his mate though later, during the period of regular copulation, which in normal cycles follows the onset of soliciting by a few days, she does so more than he. In the case of those pairs that start their cycle in the winter, the first copulations may occur months before egg-laying, though in more normal spring cycles it begins 1–2 weeks before. In at least the vast majority of cases it is the male that actually mounts, but there is some evidence



that the female may occasionally do so also (see below), and she certainly quite regularly shows the intention of it. Thus, as we cannot speak of an essentially "male role" or of an essentially "female role" in describing the fundamental sexual behaviour of the Great Crested Grebe, it is convenient to have two neutral designations for the bird displaying on the platform and for the bird in the water. Huxley (and also Hartley) used "passive" and "active" respectively but, as the soliciting Great Crested is often far from merely passive, I have therefore modified this to "soliciting" and "active". In the descriptions given below, it should be remembered that the soliciting bird may be either male or female as may the "active" one in all stages of reaction up to actual mounting, when only the male absolutely certainly is involved.

### *Soliciting*

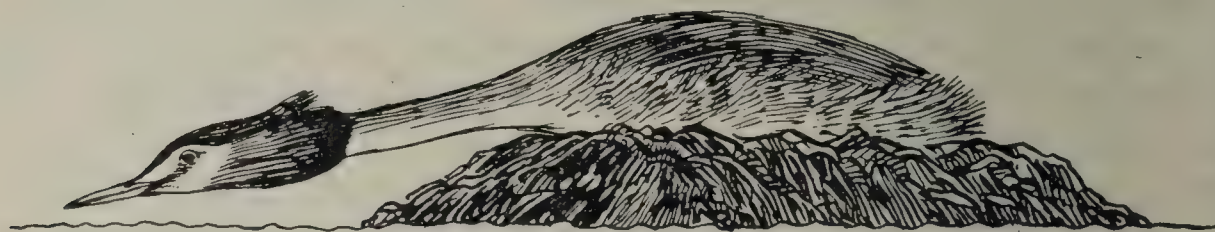
Soliciting does not depend on any fixed ritual or set of circumstances for its elicitation, the presence of the mate in the immediate neighbourhood of the nest-platform being the major stimulus. The behaviour often follows a joint swim to the weed pile, occasionally after one or both birds have "invited" in the water, or more usually after a Head-shaking Ceremony. Frequently, too, one of the pair may ascend the platform to display during a spell of building or get up for some other purpose and then solicit when the partner comes near. If the birds have more than a single platform they may solicit on any one though usually showing a preference, if only a temporary one, for a particular structure.

There are two soliciting-displays. The first to appear during the progress of the reproductive-cycle is what may formally be termed the "invitation-display", a posture that Huxley called the "passive pairing attitude" to distinguish it from the "active pairing attitude" or mounting. While a grebe may rarely "invite" in the water near the nest-platform, sometimes with its head resting on the base, usually it gets up on top of the weed pile to display. It jumps awkwardly up, perhaps fiddles with material there, and then sits down. When "inviting" at full intensity, the grebe stretches its neck well forward, with the head ornaments depressed, and remains inactive. On a low-lying platform, and in the water, the neck may normally be more or less flush with the surface, but on well built-up structures, it inclines downwards along the line of the slope. When the "inviting" bird is not fully worked up, or when the "active" one is unresponsive or not really near the platform, it raises its head a little with the neck curved. If the "active" grebe should then approach the soliciting one, the latter often then reassumes the more intense version of its invitation-display.

Early on in the cycle bouts of soliciting may consist only of weak



“inviting”, but later this display increases in intensity and frequency. In addition a more complex activity appears, the grotesque “rearing-display”. The history of this “rearing” in the literature is very puzzling. Few British ornithologists seem to have seen it, both Selous



Soliciting : the invitation-display.

and Huxley recording it only briefly and neither discuss its significance. Yet on the very first day that I watched grebes at the platform, I saw the display several times and subsequently found that it occurred regularly. Two other grebe enthusiasts, C. E. Douglas and Miss L. McCartan, have also often observed it, and Hanzák implies that he has too, though he wrongly states it to be a “special epigamous position” of the female *only*.

Huxley's account of “rearing” in his 1914 paper goes as follows (he himself not having yet seen it). “To complete the description of the mere attitudes, it remains to add that, before sinking down into the passive pairing attitude . . . the birds usually assume a curious fixed and rigid pose. I will quote Selous's words : ‘. . . curling his neck over and down, with the bill pointing at the ground [weeds], perhaps six inches above it, he stood thus, fixed and rigid, for some moments (as though making a point) before sinking down and lying all along. There was no mistaking the entirely sexual character of this strange performance, the peculiar fixed rigidity full of import and expression.’” Later, in his 1924 paper, Huxley gives a second record. “Then the hen got out on to the nest and assumed a remarkable attitude, the body slightly inclined forward, the neck, with a slight curve in it, sloped downwards at an angle of about 30°. There was a curious rigid look about the bird, which was accentuated by the fact of her remaining motionless in this position for several seconds. She then sank down on to the nest . . . The male approached, but soon departed again. The female then raised herself into the same rigid standing position for some seconds, and a second time sank down from this into the coition-attitude.” Hanzák, in his turn, reports as follows : “At the time of copulation the grebes use a special position, taken up only by the female sitting in the nest ; ♀ in the presence of a ♂ swimming round stands upright in the nest and bends its neck so that it lays its head on its underside. The beak nearly touches the nest.” The only other record that I can trace of the rearing-display comes from the 1931 *Grebe Inquiry*. “On 18th March, 1922, a pair on a





Soliciting : the rearing-display.



The Slavonian Grebe seems also to "rear" when soliciting (from a photograph by Hosking and Newberry).

Cheshire reservoir left the water and got into a marshy spit of land, where the male displayed, stretched to his full height, lowered his bill until it rested along his breast, then lay in shallow water and stretched his head along the surface." I give all these observations in full because this very characteristic behaviour has been largely



overlooked, *The Handbook of British Birds* not even mentioning it for the Great Crested or for any other species of grebe. Hanzák states that the Black-necked Grebe has a similar display as also, apparently, has the Slavonian Grebe, judging from the photograph in Hosking and Newberry's *More Birds of the Day*. On the other hand, Hartley did not observe it from his Dabchicks.

All the descriptions cited above are incomplete and deal only with the less intense form of the rearing-display. The full range of the performance is as follows. The soliciting grebe gets up on to its platform and usually "invites" first of all, though it may sometimes do the rearing-display immediately instead. In any case, in the majority of cases the bird suddenly rears up from the horizontal "inviting" position so that its body stands almost vertical. At the same time it quivers its closed wings in short spasms (a movement of the primaries outwards), flashing the white areas which are otherwise hidden. For a moment the neck curls up with upheaval of the body, but then it is arched downwards sharply in a grotesquely rigid manner at an angle of about 45 degrees to the body. The head with tippets well spread is tucked under with the bill pointing just in front of the feet, a few inches above the level of the platform. The grebe remains thus briefly and may then relax a little, this being the less intense moment of the display recorded by Selous, Huxley, and the others. Afterwards the birds subside into the "inviting" position, to "rear" again later, or first of all picks up and drops weed or preens its under-side before so doing. Occasionally it performs a second rearing-display without first unfolding into the less intense soliciting attitude.

Well developed bouts of soliciting consist of "inviting" interspersed with "rearing", the latter behaviour being particularly prone to occur if the "active" bird is slow to respond. However, even during the period of regular coition some sequences are made up entirely of the inviting-display. During the decline in sexual activity (when premature-incubation is in progress before egg-laying), the rearing-display becomes infrequent again as it was before full soliciting commenced.

#### *Behaviour of the "Active" Bird*

The response of the "active" bird in the water near to its soliciting mate varies considerably, ranging from apparent indifference to the full act of mounting. It may not approach the platform at all but drift away from it, preening and so on. On the other hand, it may go off to forage for nest-material, bringing weed and adding it to the platform, or remain at the structure and fiddle about with stuff at its base. In all these cases, the grebe's sexual feeling is just not strong enough, or uninhibited enough, for it to mount and copulate. When the tendency for the latter increases the "active" bird may start to

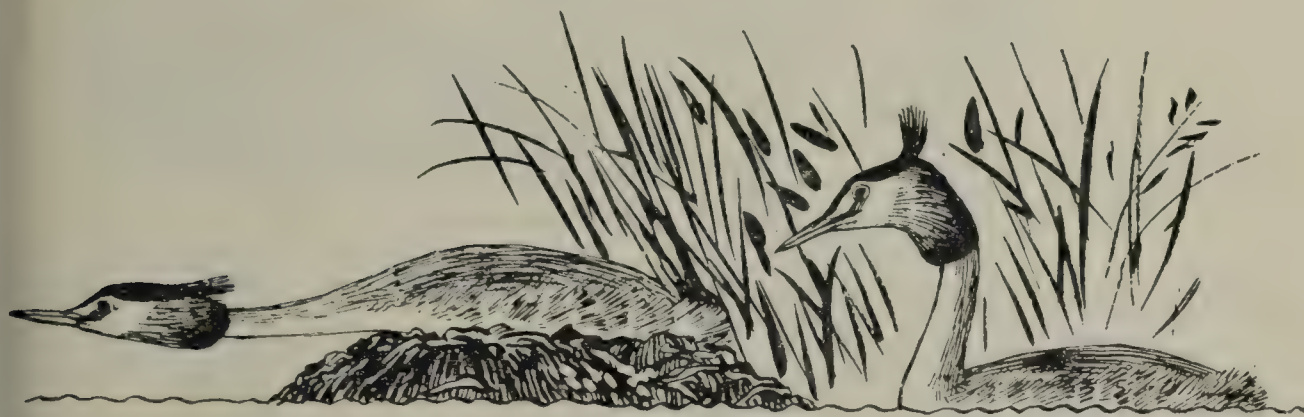


headshake spasmodically at its mate, sometimes habit-preening as well. The soliciting grebe may finally respond to this and a joint ceremony results, as previously described on page 188. If so, the soliciting bout often ends soon after with copulation unachieved.

Sometimes the "active" bird will mount soon after its mate starts to display on the nest-platform; at others repeated alternations of "inviting" and "rearing" are needed to raise it to the right pitch.

#### *Copulation and Behaviour Afterwards*

After any or all of the preliminaries mentioned above, the "active" grebe may show real signs of wishing to mount. It swims round so as



The "active" grebe of either sex may show the intention of mounting the other.



In mounting, the male leaps up with a harsh, rattling call.

to be directly behind the soliciting mate. If mounting does not then follow, the bird may continue to poke about the nest and to headshake spasmodically at low intensity. It shows its real intentions, however, by repeatedly swimming right up to the base of the platform,



making aiming movements of the head as if about to jump up, only to move away backwards again. While all this is going on, the bird's tippets are usually depressed rather furtively but the crest is well raised—a combination which gives it a rather surprised look. The soliciting of the other bird, especially its "rearing", may spur the "active" one on if it is thus hesitant, and its manner becomes



The male dismounts, landing upright in the water.

increasingly more "confident" until finally, with tippets now markedly spread out laterally, it mounts. As this is predominantly, if not entirely a male activity, I shall refer to the "active" bird as a male from this point. He leaps out of the water on to the female's back with his closed wings quivering, as in the rearing-display, and uttering a loud and harsh rattle, described by Hanzák as characteristically throaty and "sounding like a creaking *ee eee*". Standing there, with body almost upright, neck arched forward with the tippets fully spread and crest raised, he copulates for up to approximately 6 seconds or so only, the rattling call, meanwhile, changing to the more common ticking one. Then he waddles along the female's back, and over her head, to land upright in the water with much splashing of water as he remains where he alights, making paddling movements of the feet to keep him up. From the vertical position with rear-end submerged, he soon subsides into a normal floating one and begins to head-shake, at times quite intensely, with his back to the female. She, meanwhile, after remaining in the full "inviting" posture during coition, has raised her head and, when her mate begins to head-shake, joins in. This joint, post-copulatory, head-shaking ceremony is a regular feature. It soon dies down and the male, gradually relaxing his position, swims slowly away, perhaps preening. The female may also preen spasmodically before getting off the platform or resettling to sit.

Selous and Huxley give little details about actual coition itself and do not mention the activities that follow. Hanzák does record that an "incomplete courting" once came after copulation but implies that this is unusual. Also, while doubting, correctly, that the Great Crested Grebe regularly uses its wings to keep balance during the



sex-act (as maintained by Staněk and Hesse), he wrongly figures the male more or less lying along the female's back when mounted.

It is of incidental interest to record that the bird which mated on the sand in 1949 (see above), landed on firm ground after coition and performed there quite typically before waddling back to the water.



The post-copulatory Head-shaking Ceremony—male with back to female.

#### *The Evidence for Reversed Mounting*

In 1901 Selous saw the smaller of the pair of grebes he was watching, and therefore the presumed female, twice mount its larger mate. He did not witness the converse of this, and one would have expected him to do so if the larger grebe was behaving anything like a typical male. However, I agree with Huxley that there is little likelihood of the smaller bird being anything else but a female. Since Selous's time, our knowledge on this point has hardly progressed at all and we are in urgent need of really definite cases of reversed copulation in this species. I can find no certain record in my own notes of a female Great Crested Grebe mounting a soliciting male, though I have a vague memory of seeing this in 1948 when under the impression (falsely given to me from several standard works) that such behaviour was regular. Likewise, Hanzák states that he has "not been able to observe in the grebes the two-sided pairing which often occurs in species with a small sex dimorphism and mentioned also in connection with the Great Crested Grebe (Niethammer, 1942)". While, therefore,



the evidence for reversed copulation is slight, I do feel that it is in fact very likely to occur occasionally, judging from my own observations on females showing the intention to mount and also from an assessment of the "bi-sexual" nature of most of the grebe's behaviour patterns.

### *Discussion*

While presenting several problems of its own, the platform-behaviour of the Great Crested Grebe is much easier to understand than the courtship activities, and a few points will now be dealt with very briefly.

First of all, the derivation of the soliciting-displays. On grebe standards, the invitation-display is a relatively simple one in which the body position best suited for effective mating has been exaggerated by the extension of the neck, a movement seemingly of no utilitarian value so far as mounting is concerned. The probable original form of this posture is shown by the Dabchick which does not stretch its head forward when adopting its "invitation pose" (Hartley). In contrast, the rearing-display is much more complicated. There are two main components. The initial erection of the body with wings quivering closely resembles the behaviour of the male immediately on mounting the female. I would hazard the suggestion that, in actual fact, this has its origin in mounting behaviour. The second part of the display, the downward extension of the neck, may possibly be founded on movements directed at the nest for some purpose. Hanzák points out that "This is very reminiscent of the position in which the grebe arranges the eggs under itself", and the similarity is stressed by the angle of the bird's head. However it must be pointed out that, after the main "rearing" action, the soliciting grebe may sometimes toy with weed on the platform or preen its underside, so the neck movement of the display is perhaps equally likely to be based on initial nest-arranging or preening behaviour. More study is needed.

The chief internal drive which causes a grebe to ascend its nest-platform and solicit is quite clearly a sexual one, using the term "sexual" in a strict sense, that of "desire to copulate". Investigations so far give little evidence that other impulses play an important role (as they do in courtship), though possibly a weak escape tendency is there because the "inviting" bird does depress its tippets and crest. When "rearing" the grebe is obviously in a more intense sexual mood than when merely "inviting"—many things point to this conclusion, not least of all the fact that the rearing-display is probably partly derived from actual copulating movements.

The "bi-sexual" nature of the Great Crested Grebe's sexual behaviour may perhaps be best appreciated if we consider the sequence "inviting → rearing → mounting" as one in which the sexual



tendency is increasing in strength throughout, as all the evidence suggests. Only the male *regularly* reaches the full limit of sexual feeling and it is he, therefore, that usually performs the active role in coition and not his mate. The female, being at a relatively lower sexual pitch, regularly only reaches a state of showing intention to mount, but occasionally, when her feelings are exceptionally strong for one of her sex, she too may actually mount in all probability. In normal copulations the initiative is taken by the female. The "bi-sexual" arrangement is of special value to the male, therefore, because, apart from being able to express himself at times of relatively low sexual feeling, he can also, if highly worked up, solicit when the female does not take the initiative. The result is an overall increase in sexual efficiency. Huxley has discussed this subject from a mainly different angle and his argument is worth repeating here. Because of the need for a firm support in copulating, the female grebe had to take the initiative by assuming the invitation-display. Unlike the males of many other species, the male grebe, therefore, had no means of expressing his desire to mate. Hence, "the pairing attitude of the female was transferred to the male to give him, too, a means of expressing his readiness to pair—to enable him, should he wish it, as well as the hen, to take the first step towards the performance of the act of copulation by the pair." In addition this process of "reversal of the sexes" went further and the female came to possess the mounting behaviour of the male.

The soliciting-displays act as general sexual stimulants to both sexes, much more so than courtship, the function of which lies mainly elsewhere. "Inviting" is something more than a passive position for mating. Together with "rearing" it is also a display in the strict sense of the word, that is a signal-movement functioning to stimulate sexual responses in the mate. Female soliciting helps to release mounting in the male. Male soliciting, while only infrequently (if at all) releasing actual mounting on the part of the female, does at times raise her to such a pitch that she shows a desire to do so.

Copulation in grebes always has the appearance of efficiency and success. There is none of the half-hearted standing on the female's back on the part of the male, or any breaking away before consummation on the part of the female, that one finds with many other birds. The reasons for this are: that the female must be sufficiently intense in the first place to get up on the platform at all; that the male will not mount unless she is soliciting, and that he will not do so in any case unless he himself is at a very high sexual pitch. I believe, partly from observation, partly from an intuitive feeling, that the "active" grebe understandably "dislikes" jumping up out of the water. His hesitation, and the depressed, furtive tippets, suggest some fear. When this is suppressed by his over-riding sexual urge, and only then, the male



will mount. All this results in his being really purposive when he does finally copulate and makes for successful mating.

Actual copulation in the Great Crested Grebe lasts for quite a short time, some six seconds or so. This supports my contention that the male is very ardent indeed when he mounts, and also that grebes find it physically easy to mate quickly. There is much variation in the time birds take to copulate and many factors which determine this. In Blackbirds (*Turdus merula*), for example, Dr. D. W. Snow tells me that it takes "less than a few seconds", apparently because other males are liable to interfere. No such interference, or the possibility for it, has been seen in grebes. On the other hand, Masked and Peach-faced Lovebirds (*Agapornis personata* and *roseicollis*) in my aviaries copulate for up to four minutes. There is no interference with mating in these species and the males are able to work up to full intensity during the sex-act itself.

Reversed mounting occurs in several species, notably pigeons. In discussions of this phenomenon in the literature (for example, that of Huxley himself and of E. A. Armstrong, in *Bird Display and Behaviour*), it is assumed that such behaviour occurs *regularly* in the grebe and that it is strictly comparable with the reversed mounting of the other birds. Assuming for the moment that the female grebe does occasionally mount the male, as I firmly believe she does, this activity comes after a soliciting spell by the male and *not* after a mounting attempt by him. The latter is the usual procedure in pigeons and other species, as, I believe, my friend Derek Goodwin pointed out to me. Only recently, after I started to type this discussion in fact, I saw such a case in my aviary. A female Blue-winged Parrotlet (*Forpus passerinus vividus*) left her nest and joined the male. He attempted his usual one-footed mounting with swaying head and body but, as I carefully noted, his tail did not bend sufficiently under the female's, and he soon stopped. The female immediately sidled up to him and in turn placed her foot on his back and drew her body close. Afterwards they both did the "screwing", side-to-side regurgitating movement which normally the male only does. In all species, grebes, pigeons, parrotlets, etc., this "male" mounting behaviour on the part of the female is due to a very intense sexual urge that is greater than that normally experienced by the sex, and is often also the result of inadequate sexual response of the part of the male.

After dismounting the male grebe usually initiates a post-copulatory Head-shaking Ceremony. This is caused, I think, firstly by a slight surplus of sexual feeling left over after the speedy copulation, and then by escape and aggressive tendencies aroused by close bodily contact with his mate, a situation known in other species to produce such a set-up. The escape urge is indicated by his upright stance in the water which is similar to the "escape-bathing" one. In several



species, the same reactions are shown after coition as after certain stages of fighting. To give one example, already reported in the *AVICULTURAL MAGAZINE* (Simmons, 1953), Little Ringed Plovers displacement-feed and preen during tiffs with rivals and after copulation when the mated birds also run away from each other.

Finally, a brief word on the relationship between nest-building and sexual behaviour which will be developed more fully elsewhere. Initially, the nest-platform is built up until solid enough to hold a soliciting grebe and then building behaviour declines as soliciting intensifies. If, however, an already raised substitute-site is employed there may be no nest-building during the period of marked sexual activity. Often grebes forage and bring material when their other behaviour shows that their desire to solicit, etc., is weak, and nest-building intensifies once again after the copulatory stage has started to decline. All this suggests that nest-building urges are subordinate to and depend on the sex-drive for their intensity.

*(To be concluded)*

\* \* \*

## PINKFEET IN THE ROYAL PARKS

By W. G. TEAGLE (Ministry of Works, England)

The news that a pair of pinioned Pink-footed Geese had nested in Kensington Gardens in 1954, and had managed to rear a gosling, was greeted with surprise, for Pinkfeet do not nest very readily in captivity. Now, in 1955, the same pair has nested again and has produced a brood of three.

The parents are two of a flock originally obtained from Peter Scott, who in 1947 presented the Ministry with eight Pinkfeet for the St. James's Park wildfowl collection. Another twelve were received from Mr. Scott in April, 1948, and were released on the Long Water in Kensington Gardens.

On 29th May of the same year Tom Hinton, then Bird-keeper for the Central Royal Parks, discovered that all but two of the St. James's Park birds were missing. Visiting Hyde Park three days later, however, he was amazed to find them on the Serpentine, where they had joined the flock of twelve. Since they were pinioned birds one can only conclude that they had walked all the way *via* the Green Park and Hyde Park Corner—a distance of about three-quarters of a mile. The migration could hardly have taken place in daylight, and one is tempted to visualize the scene as the birds filed past the Duke of Wellington's statue in the small hours, to the bewilderment of any nocturnal revellers who happened to be abroad!

During the early years of its stay on the Serpentine a few members of the flock were lost, but thirteen birds managed to accept the dogs,



the swimmers, and the rowing boats with which they had to share the water and to tolerate the smaller craft on the Round Pond. There may have been nesting attempts before 1954—breeding behaviour was noted in 1952 by the two Official Bird Observers for Hyde Park and Kensington Gardens, Charles Parsons and Christopher Hawes—but it was on 19th July, 1954, that the appearance of a small downy gosling proved that nesting had actually taken place. The young bird was closely guarded by its parents and for some time the trio usually kept a little apart from the main flock. The young bird survived the unpleasant summer and is still with the flock, although left unpinioned.

During the spring of 1955 the Official Observers could only account for ten of the fourteen geese, and hopes that this time two pairs were nesting in one of the enclosures began to rise. It was quite late in June, however, that reports reached me *via* the Park-keepers that Pinkfeet had in fact bred again, but apparently only one pair of them did so. Three goslings, all belonging to the birds which bred in 1954, were about a month old when they were seen by the Official Observers on 28th June. The accompanying photograph was taken on 20th July, by which time the goslings were almost as large as the adults. The bird reared in 1954, recognizable because of its unpinioned wings, was keeping company with the family.

The three new goslings bring the total number of Pinkfeet in Hyde Park and Kensington Gardens up to seventeen, and one may hope that a further increase can be expected next year. Meanwhile, there remain two birds in St. James's Park, the two that stayed at home in 1948 while the others went walking.

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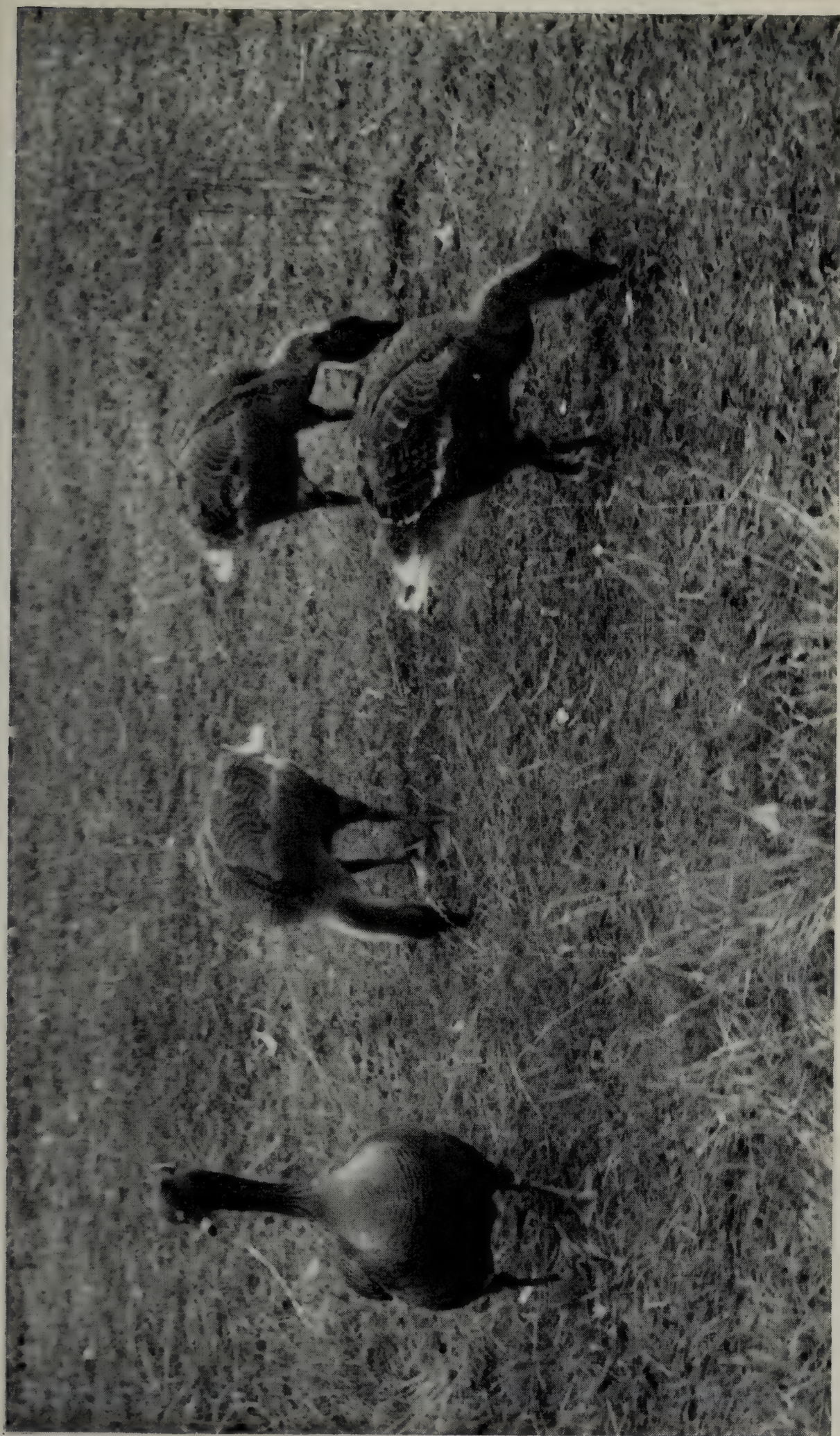
## LONDON ZOO NOTES

By J. J. YEALLAND

The second of the joint London Zoo and B.B.C. expeditions set out during March, this time to British Guiana, where films were taken for showing on television and specimens of the fauna were collected. As before, Mr. J. W. Lester led the expedition and he was accompanied by Mr. H. Vinall, the Overseer of Ungulates. Mr. David Attenborough and Mr. Charles Lagus of the B.B.C., who returned by air at the end of June, made up the party.

It was hoped to bring back the animals during June, but owing to shipping delays it was not until 8th August that the collection was landed in Liverpool. Unfortunately Mr. Lester became ill and had to return to London by air. I went to Georgetown to help to bring back the collection and a list of the birds is appended to these notes.





*Ministry of Works Photograph*

*[Crown Copyright Reserved]*

PINK-FOOTED GEESE REARED IN HYDE PARK.







A stay of only two weeks in Georgetown scarcely qualifies one to write of the bird-life of that crowded city, particularly when much of the time is taken up with the care of the collected specimens and making arrangements for bringing them back. The collection was kept in an outhouse at the residence of the Director of Agriculture in the lovely Botanical Gardens and hereabouts there were more birds than in any other part of Georgetown. No visitor to British Guiana could fail to notice the Sulphury Tyrant, as it is called here, but it is known there as the Kiskadee, or Kiskadee Flycatcher, a name said to be a corruption of "Qu'est ce qu'il dit?" and undoubtedly derived from the bird's call. Like the night-long chorus of frog and toad calls, the cry of the Kiskadee threatens at first to get on one's nerves and then, after a day or two, one becomes accustomed to it and no longer consciously hears it. This bird is certainly a tyrant, but hardly a fly-catcher; one of the main foods seemed to be grasshoppers and it is said to eat nestlings of other birds. Two came regularly to eat food put out for cats at the nearby house and they were especially fond of any boiled rice that might have been thrown out. I once saw one on the rafters of the abbatoir, eyeing the bloody scenes below, but whether it was a regular visitor in search of food or whether it just wandered in there, I do not know.

Once or twice we caught sight of a grey-headed bird that looked to be a near relative of the Kiskadee, but I have not discovered what it was. There was one of the small Tody-Tyrants about in the trees; it seemed to feed on caterpillars that it snatched from the leaves.

Sometimes a Humming Bird would come to the flowers of hibiscus bushes that formed hedges round about the outhouse, staying for no more than a second or so at each flower. Once, while we were working among the animals, one came and sat for quite half a minute on an overhead wire, putting its head on one side and intently studying the strange happenings beneath, and one afternoon in a very poor part of the town, where the houses were no more than wooden shacks crowded together, I saw one come to feed on the flowers of some stunted zinnias in a tiny garden. It was strange to see so exquisite a bird amid such squalor. The only Humming Birds that I saw in Georgetown were the White-bellied and Lesson's Emerald. There may, of course, be others at other times of the year. Quelch writes of the Cayenne Hermit, Longuemare's Hermit, the Broad-shafted Sabre-wing, the Violet-tailed and Green-throated Mango, Black-eared Fairy, and others as being seen in Georgetown, some of them "quite common", but that was long ago. The American Egret, Snowy Egrets, Little Blue Herons, and the Buff-backed were quite common. The last is a self-introduced bird and seems now to be well established. An island in the Botanical Gardens is a favourite nesting place for the Egrets and Herons.



Small numbers of the Common Ani or Old Witch were sometimes about the Gardens and Black Vultures occasionally passed over. The Everglade Kite is common ; this bird lives largely, if not entirely, on the large marsh snails. In the swampy fields outside the town I saw one of these Kites swoop down and pick up a snail in its talons. These birds must possess remarkably keen sight to see the snails from a height.

A pair of Talpacoti Doves came regularly to the gravel drive and occasionally there were one or two of what I feel sure were the Thick-billed Seed-finches. A pair of Blue Tanagers had a nest, evidently containing young, quite high up in a tree : it was pointed out to me by a gardener who was engaged in what can only be described as weeding the trees with a long-handled hook. There are epiphytic plants with leaves like those of a pineapple which grow very commonly on the bushes and trees and the gardeners spend a lot of time in hooking them off—in fact they could be said to weed the trees more often than they weed the gardens.

On some of the trees there were great clusters of a narrow-leaved mistletoe : I only saw this on trees that were overhanging water and the berries were a favourite food of some of the birds.

There is a small zoo in the Gardens where, except for some Peafowl, indigenous specimens are shown. There is no bird market, but one sometimes sees a bird-fancier in the streets carrying a pet bird in a small cage—generally, I think, a Little Yellow Finch, or Little Saffron Finch (*Sicalis minor*), and a few people keep an Orange-winged Amazon, locally and appropriately known as the Screecher. There are one or two bird-catchers, but I believe they do not normally catch anything but small seed-eaters.

The protection laws prohibit the export of birds and their plumage except by an Order in Council, but there seems to be no prohibition of bird-catching.

Two days before he started back I went with Lester to the Rose Hall sugar estate on the southern side of the Berbice River, where Hoatzins are common. There is first a drive of about three hours over a rough road to Rossignol, thence by ferry across the muddy river to New Amsterdam and then a short drive to the vast sugar estate. The country is flat and marshy where a certain amount of rice growing is done. It was interesting to see Surinam Jacanas walking about in the fields, the yellow on the underside of their wings being very conspicuous in flight. Here, too, were some of the Cayenne Red-breasted Marsh-birds, locally known as Robins, and some Yellow-headed Marsh-birds, while the Black Vultures, Everglade Kites, and Egrets were quite common. A striking black and white bird was seen, always singly, here and there along the road and always near water. It was the White-shouldered Water Tyrant



or Cotton-bird. It was, perhaps, the contrast with the black of the plumage that made the white appear of a remarkably glistening quality. This is one of the many birds observed by J. J. Quelch in Georgetown, and he writes of it: "A very small Tyrant, about 4-5 inches in length, known as Cotton-bird (*Fluvicola pica*) is also usually to be found about the grassy parts of the town, and more especially by the trenches of the outskirts among grassy and bushy wastes."

Quelch's observations were made some sixty years ago when, no doubt, Georgetown was a very different place—at any rate, it was several miles from the town that I saw the first of these Water Tyrants.

The nest is said by Schomburgk to be composed chiefly of plant cotton, so that accounts for the local name. At one place along the road in a grove of coco-nut palms there were a number of nests hanging from the tips of the palm fronds, but there was no sign of occupants. Over the river were two or three Black-tailed Skimmers, but the water was muddy and swiftly flowing, so evidently did not suit other birds, for there were none but the Skimmers to be seen.

On arrival at the sugar estate, we found that some Hoatzins had already been caught for us; we had planned to return by a ferry early in the evening, but as the main object of our visit had been achieved before we arrived, we decided to return by the first available ferry. This just allowed time for me to go to see the Hoatzins in their natural haunts on the outskirts of the plantation. The tangled bushes where these strange birds live were separated from the track by a wide ditch of muddy water, the abode of numerous crocodiles. As it was around midday, all was quiet, for by all accounts the Hoatzins are active early and late in the day and sleep in the shade of the bushes during the hottest time. At a chosen spot my companion stopped the truck and clapped his hands, whereupon a chorus of querulous squawks came from the bushes and four or five Hoatzins scrambled into view. They did not attempt to fly, but made their way in an awkward fashion about the bushes and slowly disappeared. A little further on we saw a nest in a very open, exposed position with a Hoatzin sitting on it. These bushes were growing in water and mud, so the birds were well protected except, perhaps, from birds of prey. One gets the impression that Beebe (*Our Search for a Wilderness*) is correct when he writes: "Inexplicable though it may appear, the Hoatzin—though evidently unchanged in many respects through long epochs—yet is far from being perfectly adapted to its present environment. It has a severe struggle for existence, and the least increase of any foe or obstacle would result in its extinction."

The flight is very weak and the plumage appears too permeable to withstand the heavy rains that sometimes fall in that area, but no doubt the large leaves of *Caladium arborescens*, one of the Hoatzins'



food plants, provide shelter. Another food plant is the Pimpler thorn (*Drepanocarpus lunatus*), about which the birds would need to climb with care to avoid injury, for the branches are covered with long sharp thorns. Fruits are said to be eaten too, but it seems doubtful whether these would be available throughout the year. The Mucka-mucka, as the *Caladium* is locally called, was in bud during July; this plant looked to be related to the well-known *Phyllodendron* and had the same climbing habit. It was common among bushes growing near water and, except for the youngest growth, the leaves were tough and bitter.

We gave two of the newly-caught Hoatzins to the zoo and another with an eye injury was released in a big clump of bushes interspersed with the *Caladium* growing on the banks of one of the lakes in the Gardens. Lester brought back one established bird that he had collected three or four weeks before and one that was newly caught. The latter did not live long after arrival here, but the established one is doing well—we hope—at the Bird House. It is always difficult to judge whether Hoatzins are thriving and one can only go by the amount of food they eat. I started back with two, but one died after three days and the other after seven days, so I feel sure that it is very important to get these birds well established before the journey.

Two or three days before starting back, I was brought a newly-caught Black-capped Mocking-thrush and, unlike the Hoatzins, this interesting bird took readily to captivity, was quite fearless from the first, and ate mealworms at once. During the voyage I could not induce it to eat any of the insectile food; I mixed chopped mealworms and grated hard-boiled egg with the food, but the Mocking-thrush carefully picked out the fragments of mealworm and left the rest. Now, in the Bird House, its diet is supplemented with moths, gentles, and locusts, but it is still unwilling to touch the inanimate food. A curious feature of this bird is a small patch of bright yellow skin on either side of the throat.

Beebe refers to the calls of these Mocking-thrushes, describing how a pair sat together uttering a rapid call "hour after hour" to be answered by another pair in a neighbouring bush: "At each enunciation the half-spread tails of the respective pair of birds wagged violently from side to side as if pulled with a string. As the utterances of each of the two birds were synchronous, the wagging was always in perfect time . . . These active interesting birds have in addition an elaborate song uttered singly . . ."

There are two species only in this genus, the other being *D. albivittatus* of Bolivia.

The Rails and their relatives, in spite of their extreme nervousness, seem generally to take well to captivity, provided, of course, that part of the cage is covered so that they have somewhere to hide. I was



brought a small Rail or Crake only a few days before leaving and it very quickly took to eating the insectile food with a few mealworms mixed in. It seems to be an immature bird and is not yet identified. Now, at the Bird House, it is already much steadier and often comes out from its brushwood covered corner during the day. The Glossy Cowbird is common in British Guiana and a pair of these already at the Bird House were brought by Mr. Durrell in 1950, when they were received as Silky Cowbirds or Argentine Cowbirds (*M. bonariensis*). This form is much larger than the Glossy (*M. b. minimus*) and has a more southerly range. The Glossy used to be called *Molothrus atronitens*, and those that came in 1950 were the first of this race to be in the Collection unless others previously acquired had also been mistaken for the larger bird.

We returned on the S.S. *Arakaka*, a small ship that, in 1952, picked up Dr. Bombard after he had been for fifty-three days in a rubber dinghy sailing from the Canary Islands to Barbados, where he landed after sixty-five days at sea. Dr. Bombard undertook this extremely hazardous voyage to prove his belief that castaways could live "off the sea". He took food with him in a sealed case, but he used none of it; instead he fed on raw fish that he caught and plankton, drinking small amounts of sea water, water squeezed from fish, and rain water collected when the chance occurred. As he says in his book, *The Bombard Story*, as the translation is entitled, he would probably have become insane had he not met the *Arakaka*, for owing to a navigational error, he believed himself to be some six hundred miles nearer to land than he actually was, a belief that was encouraged by the sight of a number of Frigate Birds, Tropic Birds, and a Shearwater. This, according to a publication brought out during the war for the benefit of the shipwrecked, meant that land was near—three hundred miles at the most—whereas he saw them more than a thousand miles further out than this. After a short stay on the ship, he went back to his dinghy and landed on Barbados twelve days later. The *Arakaka* called at Port of Spain, anchoring off the harbour for a few hours to take on oil fuel and other supplies. We could not spare the time to go ashore, but Mr. Lau and Mr. Dickson, honorary curators of the Trinidad Zoo, came out bringing with them a present of three Yellow-winged, a Purple, and a Black-headed Sugar-bird. Near the islands were a few Brown Pelicans resting on the sea and a number of gulls could be seen close inshore.

Some very attractive birds have arrived at Regent's Park during July and August: these include a pair of Macklot's Sun-birds (*Chalcostetha chalcostetha*); two Little Green Herons (*Butorides striatus javanicus*), both of these new to the collection; a Blue-breasted Banded Rail; a Burmese Slaty-headed Parrakeet (*Psittacula himalayana finschi*); a Rosy-headed Parrakeet (*P. cyanocephala rosa*), and four



Red-crested Wood Quail or Roulroul Partridges, all presented by Sqdr.-Ldr. K. C. Searle. Another interesting and uncommon presentation was a Red-masked Conure (*Aratinga rubrolarvatus*, or *A. erythrogeus* as it is now called). A Salle's Parrot has been received in exchange. The breeding pair of Green-winged Kings had two young ones this year and these have now left the nest, as have five Quaker Parrakeets and four blue-bred green Masked Lovebirds.

The Herring Gulls have bred four young and the King Penguin hatched during July is now quite large. The Grey-headed Gallinules hatched two young in their first nest, but lost them : a second clutch was laid and the resulting young one is now a large and apparently thriving chick. It is still covered with black down and is still taking food from the parents' beaks, but it now begins to feed itself. A Green-backed Gallinule in the same aviary takes a great interest in the chick and his attentions are well received by the parents, if indeed as we sometimes wonder, they are both the actual parents. The Brush Turkeys have been nesting and a chick that evidently emerged from the mound unnoticed was found dead in the enclosure. An examination of the mound revealed four eggs, one of them apparently fertile.

Sonnerat's and Ceylon Jungle Fowl have chicks and a number of the common pheasants and geese have been reared.

Disaster overtook the flock of homing Budgerigars at the end of July when one or two cases of psittacosis occurred among them and all were destroyed, the perches and nesting boxes being burned. No doubt this disease, which is, of course, by no means confined to parrot-like birds, was contracted from the many pigeons and other wild birds that frequent the Gardens and among which the Budgerigars were often picking about on the lawns. This was particularly disappointing, for the colony had been a thriving one and when I last saw them at the beginning of July many of them were flying out and making a fine show. When the boxes were inspected in June there were thirty young ones nearly ready to come out, and at the time of the destruction of the flock a further twenty-six young were in the nests.

Another serious loss was that of the Mantell's Kiwi from pericarditis after only two years in the Gardens.

The young Amazon Parrot from Central America presented some time ago by Mr. Chippendale is now identified as a White-browed or Spectacled Amazon (*Amazona albifrons*).

Birds brought from British Guiana :—

\*1 Black-throated Cardinal (*Coccopsis gularis*). 5 Yellow-winged Sugar-birds (*Cyanerpes cyaneus*). 1 Purple Sugar-bird (*Cyanerpes caeruleus*). 1 Black-headed Sugar-bird (*Chlorophanes spiza*). \*1 Red-fronted Woodpecker (*Melanerpes rubrifrons*). \*3 Cayenne Jays (*Cyanocorax cayanus*). 2 Great Green Caciques (*Ostinops viridis*). 4 Glossy Cowbirds (*Molothrus bonariensis minimus*). 1 Yellow-headed Marsh



Bird (*Agelaius icterocephalus*). 3 Cayenne Red-breasted Marsh Birds (*Leistes militaris*). 2 Yellow-crowned Troupials (*Icterus chryscephalus*). 3 Golden Hang-nests (*Icterus xanthornus*). 2 Yellow-backed Hang-nests (*Icterus croconotus*). 1 Swainson's Grackle (*Holoquiscalus lugubris*). 4 Lesser Rufous-headed Tanagers (*Tangara cayana*). 4 Blue Tanagers (*Thraupis episcopus*). 2 Palm Tanagers (*Thraupis palmarum*). 1 Magpie Tanager (*Cissopis leveriana*). 1 Lavender-backed Finch (*Sporophila castaneiventris*). 5 Fire-red Finches (*Sporophila minuta*). 5 Lined Finches (*Sporophila lineola*). 2 Pileated Song Sparrows (*Zonotrichia capensis*). 1 Graceful Mocking Bird (*Mimus gilvus*). \*1 Black-capped Mocking Thrush (*Donacobius atricapillus*). 1 Cock-of-the-Rock (*Rupicola rupicola*). 2 Red-billed Toucans (*Ramphastos monilis*). \*1 Roraima Emerald Humming Bird (*Chlorostilbon prasinus subfurcatus*). 3 Lesson's Emerald Humming Birds (*Amazilia fimbriata*). 1 White-bellied Emerald Humming Bird (*Amazilia leucogaster*). 3 Blue and Yellow Macaws (*Ara ararauna*). 1 Scarlet Macaw (*Ara macao*). 2 Red-bellied Macaws (*Ara manilata*). 3 Green-winged Macaws (*Ara chloroptera*). 1 Hahn's Macaw (*Diopsittaca hahni*). 1 Yellow Conure (*Eupsittula solstitialis*). 7 Brown-throated Conures (*Eupsittula pertinax aeruginosus*). 9 Blue-winged Parrotlets (*Forpus passerina*). 3 Mealy Parrots (*Amazona farinosa*). 2 Red-vented Parrots (*Pionus menstruus*). 1 Hawk-headed Parrot (*Deroptyus accipitrinus*). 4 Black-headed Caiques (*Pionites melanocephala*). 2 Cayenne Owls (*Rhinoptynx clamator*). 1 Trinidad Pygmy Owl (*Glaucidium brasilianum phalaenoides*). \*1 Short-winged Burrowing Owl (*Speotyto cunicularia brachyptera*). \*2 Isabelline Kestrels (*Falco sparverius isabellinus*). 4 White-faced Tree Ducks (*Dendrocygna viduata*). 2 Grey-winged Trumpeters (*Psophia crepitans*). 1 Central American Thicknee (*Burhinus bistriatus*). 1 Rail *Sp. inc.* 1 Rufous Pigeon (*Columba rufina*). 10 Talpacoti Ground Doves (*Chaemepelia talpacoti*). 1 Red Ground Dove (*Oreopeleia montana*). 3 Crested Curassows (*Crax alector*). 1 Grant's Guan (*Penelope granti*).

\* New to the Collection.

\* \* \*

## COUNCIL MEETING

A Council Meeting was held on 14th September, 1955, in the Council Room, Zoological Society of London.

There was the following appointment :—

Elected President : Mr. D. Seth-Smith.

ARTHUR A. PRESTWICH,  
Hon. Secretary.

\* \* \*



## BRITISH AVICULTURISTS' CLUB

The forty-eighth meeting of the Club was held at the Rembrandt Hotel, Thurloe Place, South Kensington, S.W. 7, on Wednesday, 14th September, 1955, following a dinner at 7 p.m.

Chairman : Miss P. Barclay-Smith.

Members of the Club : Mrs. J. R. Alderson, P. C. Bath, Hylton Blythe, Miss K. Bonner, W. Brain, Captain A. A. Clarence, W. D. Cummings, A. H. D'Aeth, W. T. Dring, Mrs. W. T. Dring, B. H. Dulanty, Squadron-Leader C. Everitt, Mrs. C. Everitt, Miss S. A. Fothergill, Miss D. Gask, H. J. Harman, M. Scott Henderson, Dr. E. Hindle, Miss S. I. Hobday, G. T. Iles, Terry Jones, Miss E. M. Knobel, Miss M. H. Knobel-Harman, Mrs. E. M. Lonsdale, F. Mosford, G. S. Mottershead, S. Murray, A. A. Prestwich, R. C. J. Sawyer, D. Seth-Smith, P. Sutton, E. N. T. Vane, N. S. Walker, C. H. Wastell, Mrs. G. Wheatley, S. A. Wright, J. J. Yealland.

Guests : Dr. K. W. Aylwin-Gibson, J. Bailey, R. Barclay-Smith, S. A. Croucher, Mrs. S. A. Croucher, Miss H. Gentry, S. Hughes, Miss D. G. Lonsdale, Mrs. S. Murray, Dr. F. H. Rayward, Mrs. D. Richardson, G. Sutton, Miss G. Sutton, Mrs. P. Sutton, Mrs. C. H. Wastell, Miss H. Wastell, W. A. Wood, A. J. Woods, Mrs. S. A. Wright.

Members of the Club, 38 ; guests, 19 ; total, 57.

Before dinner, at the request of the Chairman, members and guests stood in silence for a few moments as a tribute to the memory of the Club's Patron, Mr. Alfred Ezra.

After the Loyal Toast the Chairman said she had very great pleasure in announcing that at the Council Meeting in the afternoon Mr. David Seth-Smith had been elected President of the Avicultural Society. The new President's health, coupled with that of Mrs. Seth-Smith, was then duly drunk with acclamation. Mr. Seth-Smith in his reply said he felt greatly honoured to be elected to follow such great former Presidents at Canon Dutton (Lord Sherborne), Mr. H. D. Astley, and, of course, Mr. Ezra, who had been President for twenty-nine years.

The Chairman then welcomed Dr. F. H. Rayward, who was due to return to Sydney the following morning. Unfortunately, owing to indisposition Mrs. Rayward was unable to be present. Dr. Rayward brought messages of greeting and good-will from aviculturists in Australia which on our part are heartily reciprocated.

Mr. Gerald Iles then showed a selection of his coloured films—the Avicultural Society's visit to Clères, 1950 ; the Meeting of the International Union of Directors of Zoological Gardens, at the Antwerp Zoo, 1953 ; the Avicultural Society's visit to the Antwerp and Rotterdam Zoos, 1955, and the ever popular "Fine Feathers".



At the conclusion the audience showed by its applause that it had thoroughly enjoyed and fully appreciated Mr. Iles's efforts to entertain and amuse it.

The next meeting of the Club is on **9th November, 1955.**

ARTHUR A. PRESTWICH,  
*Hon. Secretary.*

\* \* \*

## NEWS AND VIEWS

The Ministry of Works has appointed H. A. Fooks as Bird-keeper of the Central Royal Parks, London.

\* \* \*

Dr. E. M. Lang, Director, Basel Zoo, reports that their Tasmanian Waterhens (*Tribonyx mortieri*) have hatched and reared a nest of six young ones. This is probably a "first" for Europe.

\* \* \*

E. N. T. Vane has bred a lutino Nyasa Lovebird, from birds originally in the late Duke of Bedford's collection. This is the first time this has been accomplished in this country.

\* \* \*

The Whooping Crane.—Last winter only twenty-one Whooping Cranes reached their Texas refuge and there were no young birds. This year at a secret location in Buffalo Park three pairs of adults have been found and they are rearing four young birds.

\* \* \*

Dr. C. Purkyne, Director, Prague Zoo, writes: "In 1953-54 we imported direct from China nine Derbyan Parrakeets, six males and three females. One male was sent to Whipsnade in 1954, the remainder are still in our Garden and thriving. Two hens have laid eggs; one has hatched two young."

\* \* \*

G. A. Coleman reports one young Lazuli Bunting flying, twenty-five days old on 1st August, and the hen sitting on a further clutch of three eggs. This is probably a first success, but unfortunately Coleman is not a member of the Society so he is, of course, ineligible for the Society's Medal.

\* \* \*

A further report from C. af Enehjelm says: Lesser Rock Sparrow, three further young have left the nest. Black-crested Finch, one young one reared; the male parent was one bred in 1953. Little



Owl, all five young thriving. Wood Pigeon, again have two young in the nest. Humboldt's Penguin, two young doing well.

\* \* \*

A brood of four Layard's Parrakeets has been reared at Keston. This species has only been previously bred by Mrs. Iris Darnton, 1935, two reared; the late Duke of Bedford, 1935-38, with varying success; and at Leckford, 1939, three reared.

Other rare parrakeets bred at Keston this season include Splendid Grass Parrakeets, Pileated, numerous Turquoisines and, of course, blue Ringnecks.

\* \* \*

Breeding reports.—G. C. Lynch, 3 Rock Peblers: C. M. Payne, 3 Derbyans, 3 Rock Peblers, 2 Pennant's, 2 Princess of Wales's, and 1 Mealy Rosella: D. F. Castle, 3 Guiana Parrotlets, one male and two females: T. McCleary, Ayr, 2 Splendids—a "first" for Scotland: G. A. Gjessing, Norway, 7 Bourkes: P. C. Bath, 2 young Blue and Yellow Macaws in the nest: S. B. Kendall, two Citron-crested Cockatoos out of the nest, Dwarf Cockatoos hatched, one Plum-headed Parrakeet reared.

\* \* \*

Round the Zoos.—Belle Vue (Manchester)—arrivals, 8 Egyptian Flamingos.

Whipsnade—4 Barraband's Parrakeets reared.

Wassenaar—arrivals, 2 Australian Tawny Frogmouths. Apart from four at Regent's Park they are probably the only examples in Europe.

Basel—5 Storks hatched.

Milan—4 Black Swans hatched.

Naples—arrivals, 1 Queen of Bavaria's Conure, 4 Cassowaries, and 2 Cock-of-the-Rock.

Brookfield, Chicago—arrivals, pairs of Quetzal, Helmeted Guinea Fowl and Andean Goose.

\* \* \*

M. Willy Friling celebrated his eightieth birthday on 4th August, 1955, and a telegram of congratulations was sent by the Council of the Avicultural Society. In acknowledgment M. Friling wrote: "I was deeply touched and thank you very much for the kind wishes expressed. Let me tell you once again how much pleasure the recent visit of the Society gave me, and may I hope that as many members as possible will come again next year, in which event I will do my best to provide better weather."

A. A. P.

\* \* \*



## CORRESPONDENCE

## ANTING-LIKE BEHAVIOUR IN PSITTACINES

Mr. Derek Goodwin has in great detail described the processes of "anting" in passerine birds. If the term "anting-like behaviour" could be used to describe the application to the plumage of a bird of some irritant or volatile substance for parasitocidal or stimulating purposes I would like to report on a definite process of this nature observed in parrakeets.

A definite behaviour pattern has been observed here in three species of parrakeets but I have reason to believe that most if not all of the Australian parrakeets will follow the same routine.

The substance used was the volatile Eucalyptus oil which is very abundant in the young suckers of the White Gum (*Eucalyptus redunca*). Young suckers of this species of gum were hung in the aviaries and the following behaviour, identical in every respect, was observed in both members of pairs of the following species—Pennant's Parrakeets, Blue Mountain Lorikeets, and Red-collared Lorikeets.

Oil was extracted by mascerating the bark in the region of the leaf nodes. The leaves were not bitten off as is usually the case. After chewing the bark, the sides of the beak were rubbed on to the place until presumably some oil became adherent. From here on the behaviour was completely stereotyped.

The oil was first applied to the preening gland with a circular motion of the beak. The feathers were then fully erected and the tail feathers preened. This was followed by preening movements to the following parts in exactly this order—breast, then thighs and abdomen, under-surface of wings, back and mantle, then wing-coverts and flight feathers. The process was repeated several times, always in this order. The feathers were fully erected throughout and the oil was usually applied first to the preening gland, but on occasion directly to the part in question. The whole procedure was carried on for from 15 to 20 minutes and was followed by several stretching movements.

Apparently the Eucalyptus oil requires dilution with the normal oily preening secretion, but the purpose of the full erection of the feathers could only be surmised as to allow the oil to come in direct contact with the skin.

PHILIP M. A. HARWOOD.

GLEBE ROAD,  
DARLINGTON,  
WESTERN AUSTRALIA.

## MARKED WHITE ZEBRA FINCHES

I am very sorry Mr. Boosey has taken exception to my letter regarding Marked White Zebras. I intended to be informative rather than critical.

It was an error on my part in referring to his birds as being of "very poor quality" and I hasten to apologize for this. What I intended to say was that they must be "poorly marked" as nobody could ever dream of calling them "Chestnut Flanked Whites" if they saw a really good specimen.

Whilst on the subject of names I beg leave to ask by what right or rule does Mr. Boosey assume the authority to name these or any other birds for that matter? These particular birds were originated and named in Australia and I feel sure all fair minded fanciers will agree that this privilege should be ours.

It is of course quite possible Mr. Boosey's birds may be related to mine, but after fifteen years I would say the relationship may be somewhat in the nature of our relationship to Adam or Eve.

There is no need for further correspondence on this matter. I understand that some really good specimens of the above variety have recently been sent to England and Mr. Boosey is bound to see some of them.

N. V. WHITEHOUSE.

183-5 GEORGE STREET,  
BRISBANE, AUSTRALIA.



## BLUE RING-NECKED PARRAKEETS

I was very pleased to read in the current number of the AVICULTURAL MAGAZINE that both Mrs. Clark and Mr. Vane have bred three young blue Ringnecks this season and I think that—including our four—a total of ten of these beautiful parrakeets reared in this country this season can be regarded as very satisfactory.

I was interested also to read that Mr. David West has bred two in America and wonder if any were bred by other American aviculturists, or whether Mr. West's two represents the total number reared in the U.S.A. this season. It would also be of interest to know whether any blue-bred young have been reared there during 1955 and how many blues there are at the present time in American aviaries.

Actually American aviculturists were in the favoured position of being able to make an earlier start with this mutation than were their counterparts in this country, as the late Duke of Bedford—possibly because he thought their climate better—invariably sold to America any blue Ringnecks that he had for disposal.

EDWARD J. BOOSEY.

BRAMBLETYE,  
KESTON, KENT.

## CAIQUES

I was very interested to read the article on Caiques in the current number of the AVICULTURAL MAGAZINE, because my aunt, the late Mrs. Haynes, of Camberley, had a *Pionites melanocephala* for many years. I cannot, I am afraid, now recall the exact colouring of the under parts and therefore to which race it belonged. She brought it over from Barbados about 1920 and had it for at least fifteen years.

What, however, has prompted me to write is that I well remember its antipathy to me as a child, which you quote as characteristic of the Pallid Caique. On one occasion when I was about 10 and approached my aunt, it leant forward from her shoulder where it customarily perched and bit me just under the eye, and many other times it came down from its perch just as Stolzmann described and chased me round the room! Later, when I grew up, it preserved a sort of neutrality, and I must say that I for my part was careful to keep well away from it.

It was of course devoted to my aunt and took seeds from her mouth. Incidentally, she called it a Seven-coloured Caique.

BRUCE CAMPBELL,  
Secretary, British Trust for Ornithology.

2 KING EDWARD STREET,  
OXFORD.

## LESSER ROCK-SPARROW

I have read with interest the announcement of the breeding of *Petronia dentata* by Mr. C. af Enehjelm, of Helsingfors.

It may interest you that the same species has been previously bred in the former Rijswijk (Holland) aviaries of Mr. P. W. Louwman, owner of the Wassenaar Zoo. The writer, who at that time personally took care for these birds, has looked up the record, which says:

"Mid-May, 1933, the parent birds built a nest in a small nesting block high under the roof of the garden aviary at Rijswijk.

"So shy were the parent birds that it was some time before we were able to identify the species of the breeding birds, which shared a large aviary with many other small birds.

"On inspection on 7th June, 1933, three half-feathered birds were found in the nest. One was thrown out of the nest on 9th June.

"The other two left the nest on 12th June and lived to maturity."

W. W. DIEDRICH.

DIERENPARK WASSENAAR,  
HOLLAND.

\* \* \*



## CANDIDATES FOR ELECTION

- L. C. ANDERSON, 71 Upney Lane, Barking, Essex. Proposed by H. J. Darman.
- J. M. COLQUHOUN, Ardmore, Papakura, R.D., New Zealand. Proposed by W. G. Baird.
- LOUIS DIERCXSENS, President, Société Royale de Zoologie d'Anvers, 26 Place Reine Astrid, Antwerp, Belgium. Proposed by Miss P. Barclay-Smith.
- A. DIGGLE, 10 Cross Hill Street, Highcrompton, Shaw, nr. Oldham, Lancs. Proposed by A. A. Prestwich.
- Professor WILLIAM C. DILGER, Department of Biology, St. Lawrence University, Canton, New York, U.S.A. Proposed by A. A. Prestwich.
- H. L. DRIVER, 64 Laburnum Road, Biggleswade, Beds. Proposed by W. B. Frostick.
- C. ELLIS, Corsham Court, Corsham, Wilts. Proposed by D. M. Coward.
- A. FAIRBARN, The Round Hill, South Benfleet, Essex. Proposed by Miss K. Bonner.
- G. ST. GEORGE SCHOMBERG, 102 Drayton Gardens, London, S.W. 10. Proposed by A. A. Prestwich.
- J. SHYNAL, 48 Holly Avenue, Hamilton, Ontario, Canada. Proposed by P. Orsatti.
- R. G. SMITH, 247 Gladstone Avenue, Wood Green, N. 22. Proposed by Miss K. Bonner.
- P. VAN GIJSEGEM, O.L. Vrouwlaan 108, Evere, Belgium. Proposed by P. L. Raymaekers.
- Miss A. WALKER, Bluegum Road, Paraparaumu Bch., New Zealand. Proposed by Rowland Hutchinson.

## NEW MEMBERS

The eight Candidates for Election in the July-August, 1955, number of the AVICULTURAL MAGAZINE, were duly elected members of the Society.

## CHANGES OF ADDRESS

- E. H. BAILEY, to Green Gables, Castletroy, Limerick, Eire.
- W. D. BELL, to Sloelands Farm, Chesham, Bucks.
- T. R. W. CREWES, to Silverdale Cottage, Queensthorpe Road, Sydenham, S.E. 26.
- Miss E. K. LEMON, to c/o 1007 Government Street, Victoria, B.C., Canada.
- H. C. STEPHAN, to "Hathersage", Gordons Road, Somerset West, C.P., South Africa.
- J. H. WALMSLEY, to P.O. Box 1368, Port Elizabeth, Cape Province, South Africa.

## DONATIONS

(Coloured Plate Fund)

	£	s.	d.
PETER SCOTT . . .	5	0	0
Mrs. H. L. SCHUMACHER . . .		15	0
Major J. FINDLAY . . .		10	0



## MEMBERS' ADVERTISEMENTS

*The charge for Members' advertisements is ONE PENNY PER WORD. Payment must accompany the advertisement, which must be sent on or before the 15th of the month to A. A. PRESTWICH, 61 CHASE ROAD, OAKWOOD, N. 14. All members of the Society are entitled to use this column, but the Council reserves the right to refuse any advertisements they consider unsuitable.*

### FOR SALE

One adult breeding pair Ringnecks ; one adult cock Ringneck ; 1955 Redrump, Cockatiels, Masked and Fischer's Lovebirds. All from outdoor aviaries.—KENNETH GREENWAY, Park Lane, Long Handborough, Oxford.

Australian Bronze-winged Pigeons, £6 6s. pair ; Moustache Parrakeets, £17 10s. pair ; Abyssinian Lovebird, cock, £7 10s.—A. A. PRESTWICH, 61 Chase Road, Oakwood, N. 14.

### WANTED

Hens—Barraband's, Peach-faced Lovebird, White-eared and Brown-eared Conures.—Major V. DILWYN JONES, Sherwood, Grosvenor Road, Llandrindod Wells, Radnor.

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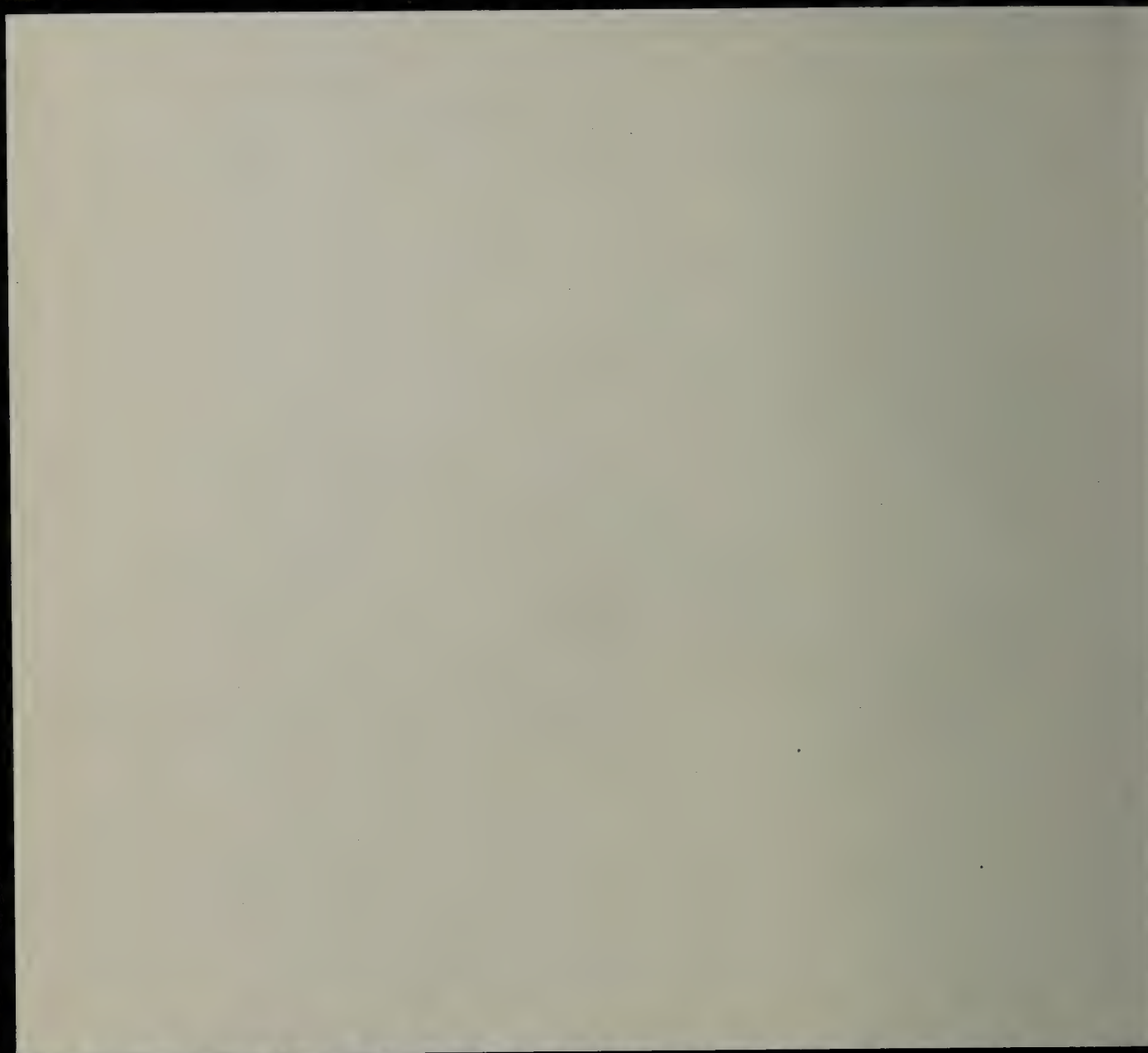


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Owing to the steeply increased cost of producing the AVICULTURAL MAGAZINE it is very much regretted that the January-February, 1956, number cannot be sent to members until their 1956 subscriptions have been received.







# AVICULTURAL MAGAZINE



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EMERALD STARLINGS.



# AVICULTURAL MAGAZINE

THE JOURNAL OF THE AVICULTURAL SOCIETY  
AND THE AVICULTURAL SOCIETY OF AMERICA

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NOVEMBER—DECEMBER, 1955

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## THE EMERALD STARLING

(*Coccycolius iris*)

By J. J. YEALLAND (London, England)

The Emerald Starling was first described in 1879 by Oustalet, who gave it the scientific name by which it is still known.

It is the only member of the genus *Coccycolius* and its known range is French Guinea, northern and north-eastern parts of Sierra Leone, and the hinterland of the Ivory Coast.

It is a bird of the open savanna country and is sometimes, at least, to be found in flocks. The food appears to consist of insect life and small fruits. Bannerman (*Birds of Tropical West Africa*, vol. vi) quotes Mr. R. R. Glanville as saying: "I have seen this Starling on not more than half a dozen occasions (in February and March) and only at or near Yana and Kabala. Its distribution would appear to be limited to the orchard bush north of 9° 30'. Ants appear to be the main food, and the stomachs of three birds examined by me were distended with small black terrestrial ants. On the occasions on which I saw this Starling it was in flocks of twenty to fifty, and was perched either on tall trees near a stream or near a village or, if feeding, on the bare ground in orchard bush recently burnt over by grass fires. I do not know if this Starling is resident in the rainy season, but I am inclined to think not."

Nothing is known of the nesting habits or the eggs of this bird. The joint B.B.C. and Zoological Society expedition to Sierra Leone in 1954 collected twenty-six Emerald Starlings which were then in flocks. Most of the birds were in the immature plumage, not yet showing the purple on the underside or on the sides of the head, this colour being replaced by a dull light brown. There were, however, one or two specimens in full colour. The sexes are alike in plumage and, as the accompanying plate shows, the Emerald Starling is one of the most beautiful of the family.



## DARENTH-HULME, 1955

By KAY BONNER (Southgate, England)

The present year has been remarkable for the breaking of records of almost every description ; with us it has been the number of mice. We have had literally hundreds and at one time it was not unusual to catch twenty or so in a single night. We then started using " Warfarin No. 3 ", prepared specially for mice ; the standard strength for rats is no use at all. We put down about three dozen baits and it was not long before there was a very noticeable reduction in the number of these very odoriferous visitors—actually this grade takes about ten days to have effect. By persevering it should be possible to destroy the whole of the resident mice but, unfortunately, there seem to be numberless vagrants. In a large collection, with much waste seed always available, one does not expect baits to be taken in preference to canary seed, surely above all the favourite seed of mice. But the addition of a little castor sugar acts like a charm. Incidentally, if break-back traps are used, toast is by far the best bait for mice and raw potato for rats. Against the latter we, of course, wage incessant war, every conceivable type of trap is kept set—it is quite remarkable how often an unsuspected marauder is caught—and baits are replenished at frequent and regular intervals.

During the year there have been many matches, some hatches, and, fortunately, but few dispatches. Our breeding results have not been spectacular but we are, in the main, to blame in that we keep too many birds, consequently there is a certain amount of interference.

The main range of aviaries has housed the following :

1. Stanley Parrakeets. We retained what we thought was the better of our two pairs, but we were apparently mistaken. Whereas ours failed to hatch their eggs the other pair, as seems to happen almost as a matter of course on these occasions, reared four good young in their new aviary at Whiteabbey—but possibly the air near the shore of Belfast Lough is conducive to breeding.

2. Queen Alexandra's Parrakeets. By appearance one of the best pairs in the country, by performance one of the worst. For the fourth consecutive season they have failed to breed. The hen is a specialist in laying here, there, and everywhere, also many of her eggs are misshapen.

3. Yellow-naped Whydahs, and Triangular-spotted Pigeons—birds of the year.

4. Cockatiels occupy this aviary with numerous Fischer's Lovebirds and a very ancient Peach-faced. The Cockatiels made several nesting attempts, but they invariably came to nothing on account of intrusions by the Lovebirds. The Jobi Island Pigeon bred last year also occupies this aviary.



5. A dozen or so Lineolated Parrakeets. We now leave them entirely to their own devices—their secretive nature prevents the exact number being known.

6. Pennant's Parrakeets. Our most satisfactory pair of breeding birds. This year they reared three good young, whereas last year they reared two, and four in 1953. The young all leave the nest in near-adult plumage.

7. Abyssinian Lovebirds. For several years we have had three pairs, but during the winter we lost a hen. They live in perfect amity, but have made no serious attempts to nest. This species is essentially one requiring an aviary to a single pair if success is to be achieved.

8. Bronze-winged Pigeons with young and a Jackson's Whydah.

9. Moustache Parrakeets.

10. Cactus Conures and a Weddell's Conure.

11. Six Yellow-cheeked Conures, four adults, and two young ones bred this year.

12. A pair of Golden-winged Parrakeets, and Emerald-spotted and Blue-spotted Wood Doves.

13. Golden-mantled Rosella and Jobi Island Pigeons. The latter have hatched several young, but none has been fully reared this year.

14. Black-headed Conures reared a good nest of three young ; and a Delamere's Whydah.

15. Bronze-winged Pigeons have reared six young in four nests ; and Masked Lovebirds.

16. Crimson-winged Parrakeets and Peaceful Doves.

17. Red-bellied Conures. We lost three during last winter and as no eggs have been laid this year we rather fear we are left with four cocks.

18. Five Yellow-cheeked Conures made a great pretence of nesting, but without result.

The Budgerigars in the escape passage in front of the aviaries have again multiplied exceedingly. Many fine birds have been reared, but there has also been quite a number which are very inferior. Some pairs appear to consider quantity preferable to quality and, in their anxiety to speed up production, encourage their offspring to leave the nest prematurely, and then either feed them very half-heartedly or leave them to fend for themselves. It is surprising at what an early age the youngsters do succeed in fending for themselves. In this flight there are also an odd Abyssinian Lovebird cock and a Peaceful Dove.

The flock of Java and Barbary Doves now numbers over forty. Their 72 feet wilderness aviary is shared with two pairs of Crested Bronze-winged Pigeons and several Purple-headed Glossy Starlings. Towards the end of July we received eighteen Buffalo Weavers. These were turned out straight away ; three rather rough ones soon died, but the remainder are doing well. We had expected them to be quite noisy,



but so far they have been singularly silent. Naturally, we are hoping that next year they will build one of their huge communal nests.

Our Red-faced Lovebird colony of twenty-seven still remains just a colony. We really felt that if they were ever going to breed they would do so during the past glorious summer when the weather was so much in their favour, but such has not been the case, and we are more than a little disappointed. The Diamond Doves in this aviary also failed to breed, in fact the only young reared were several Chinese Painted Quail.

Our main occupation during the past few months has been the building of a range of seven 18 feet aviaries. They differ from any aviaries previously erected in that the sides of the flights are constructed of wattle hurdles. Some Fruit Pigeons, especially Nutmeg, remain very wild and scary, and are apt to injure themselves by flying headlong into the netting. It is hoped that the use of wattles will not only give much greater privacy, but also reduce the risk of collective panicking.

Our Pied Imperials successfully wintered out and continue to flourish, but owing to lack of suitable accommodation the Green Imperial had to remain at the Zoo.

The nine outside pens still hold a miscellaneous assortment of Pheasants—Golden, Silver and Amherst, domestic pigeons, bantams, Triangular-spotted Pigeons, Bronze-winged Pigeons and their numerous progeny.

Bird-room No. 1 houses a pair of Noble Macaws, one All-green, one White-winged, and half a dozen Canary-winged Parrakeets, two Senegal Parrots ; with Black-headed Conures, Rosellas, and Pennant's Parrakeets in temporary residence.

Bird-room No. 2 is given over to what may be best-described as a "Clowning of Caiques". We are the very fortunate possessors of six young White-bellied. It is rather remarkable but as far as we are aware no one has yet recorded the fact that in immature plumage the head of *leucogaster* is so heavily mottled with black as to give the appearance of a black cap. The mottling is gradually disappearing, but it will be quite some time before they attain the full orange-rufous of the adult. We still have our original pair of adults.

Finally, the house parrots consist of a pair of Greys, two Senegals, a Meyer's, a Brown-headed, and a Black-headed Caique.

\* \* \*



## THE SEED PREFERENCES OF CERTAIN FINCHES UNDER CONTROLLED CONDITIONS

By DESMOND MORRIS (Department of Zoology and Comparative Anatomy, University of Oxford, England)

### INTRODUCTION

It is standard avicultural practice to provide finches in cages and aviaries with a basic diet consisting of three types of seeds: Canary seed, white millet, and yellow millet. Other seeds, green food, and live insects are usually given to supplement this basic diet, but such subsidiary foodstuffs will not be considered in the present paper. Certain finch species can survive and even complete successful breeding cycles when supplied with a diet consisting solely of the two millets and canary seed. The exact proportions consumed, of these three basic seeds, varies, however, from species to species.

In the past, very general rules have been laid down as to the rough proportions necessary for the various types of finches. These have been based on the assumption that the smaller finches will prefer the smaller seeds. In order to test this assumption more precisely, detailed analyses of the exact seed preferences of twenty finch species have been carried out and are reported below.

The results obtained are of interest both aviculturally and ecologically. Aviculturally, they provide indications concerning the most efficient aviary feeding techniques. Ecologically, they provide quantitative information concerning the relationship between seed preference differences and the structural differences of the birds concerned.

### MATERIALS AND METHODS

Most of the birds used in the following tests are members of the sub-family Estrildinæ (waxbills, grassfinches, and mannikins) of the family Ploceidæ. A detailed comparative behaviour study of the birds of this group is at present being made, which involves keeping a large number of these species in aviaries. It was as a preliminary to this study that the following experiments were carried out, in an attempt to maintain the birds in the best possible conditions. Three non-Estrildine species of finch were also available for testing and the results for these are also included here.

Eighty-four birds, belonging to twenty different species, were tested. Most of the birds were housed in small indoor aviaries of dimensions 4 feet by 3 feet by  $1\frac{1}{2}$  feet, in heated birdrooms (temperature between  $60^{\circ}$  and  $70^{\circ}$  F.) A few species were kept in larger, unheated, aviaries ( $40^{\circ}$  to  $50^{\circ}$  F.). Since the tests were carried out in the winter of



1954-5, and the temperature difference between the heated and the unheated aviaries was quite considerable, it is possible that this difference influenced the seed preferences. As will be explained later, this does not seem to have interfered with the results seriously. Nevertheless, when giving the results, it will be mentioned which species were in the unheated enclosures.

Apart from the experimental seeds, the birds were allowed no other foodstuffs during the testing periods. During non-testing periods, however, they were provided with fresh green foods and live insects as additions to their basic diet. During both testing and non-testing periods all birds were given sand mixed with shell fragments and also cuttlefish bone.

The experimental seeds themselves were of the best quality obtainable. The canary seed (*Phalaris canariensis*) was Moroccan. The white millet (*Panicum miliaceum*) and the small yellow millet (almost certainly *Setaria italica*) were both grown in Australia. The canary seed is larger than the millets and white millet is larger than yellow millet. Full details of these and other differences between the seeds will, however, be given later in the paper.

The standard experimental procedure was as follows: Four birds of one species were introduced into one of the experimental aviaries. These birds had previously been fed on a mixture of the experimental seeds for a period of several months. They were now, for the first time, presented with the three types of seeds separately, in three open containers. The three containers were placed in a triangle on the floor of the aviary and their positions were carefully randomized from day to day to prevent any interference from "position effects". The circular containers were relatively large (diameter 7 inches, height  $2\frac{1}{4}$  inches), and their walls turned inwards (1 inch) at the top, thus preventing the scattering of the seed by the birds. This last point is extremely important when testing finches, as they tend to flick their beaks about in the seed. A smaller dish, or one with walls that sloped outwards, would be useless for careful testing.

One hundred grams of each type of seed were given at the beginning of a testing period. At approximately twenty-four-hour periods the amount of seed remaining in each container was weighed (to an accuracy of one-tenth of a gram). In a standard experiment seven such daily tests were made. In some cases a second one-week experiment was carried out, but no species was tested for less than one week. If the weight of seed remaining in one container fell below the 50 gram level during an experiment, all three containers were emptied and refilled with 100 grams each. (This latter procedure was based on information obtained from preliminary experiments, which revealed that it was unnecessary to refill the containers each day, but that



preferences might be interfered with if one seed level fell to 30 grams. The 50 gram level was therefore taken as being safe.)

The results of these weighings are given in the following section, where the total amount of each type of seed eaten per one-week experiment is shown as a percentage of the total seed intake. The day-to-day results are not given. The latter were taken only to ascertain whether each species was showing a constant order of preference. Whether this was so or not, is referred to in the report on each species. It can be stated briefly here that most species did show a regular daily order of preference, but that a few species were quite erratic in some respects. Even the latter, however, were not variable in their degrees of preference for all three seeds. Typically one seed would *always* be strongly preferred, or strongly non-preferred, whilst the other two would alternate in the preference order.

In some cases, four birds were not available for testing for a particular species. In these instances, experiments were run over longer periods. For example, if only two birds were available, they were tested every 48 hours instead of every 24 hours, and for 14 days instead of 7 days. All the birds used were adults; birds which were breeding or in moult (times when special differences in food preferences are reported to occur) were not used.

The names of the birds, used in the following section, require some explanation. Delacour (1943) recently revised the Estrildinæ and, in so doing, changed many of the scientific names. Since his revision has not been adopted by certain recent authors (e.g. Bannerman, 1949; Brooksbank, 1949; Risdon, 1953), but has been adopted by certain others (e.g. Morris, 1954; Moynihan and Hall, 1954), both the old and the new scientific names are given here with each species, in order to avoid confusion. (The older name follows in brackets behind Delacour's new name in each case where there is a difference.) There is less difficulty with the popular names for, despite the fact that almost every species mentioned possesses a number of such names, there is usually one that is more widely recognized than its alternatives.

## RESULTS

### A. WAXBILLS (Estrildæ).

#### 1. RED AVADAVAT *Estrilda amandava* (*Amandava amandava*)

This species is not only one of the smallest used in these tests, but is also one of the smallest of all finches. One pair of these birds was tested. They were extremely constant in their seed preferences from day to day. They ate practically nothing but yellow millet, as the following percentages of seed eaten, calculated from the total figures, reveal:

CANARY SEED, 5.3%. WHITE MILLET, 4.0%. YELLOW MILLET, 90.7%.



2. RED-EARED WAXBILL *Estrilda troglodytes*

Four birds were tested. This minute waxbill is even smaller than the last species, but its preference for yellow millet is less extreme :

CANARY SEED, 5.1%. WHITE MILLET, 26.0%. YELLOW MILLET, 68.9%.

As above, there was very little difference in preferences from day to day during the experiment.

B. GRASSFINCHES (*Erythruræ*).3. BICHENO FINCH *Pæphila bichenovi* (*Stictoptera bichenovii*)

Although this is one of the smallest grassfinches, it is not quite as small as the previous species. Nevertheless, its seed preferences are very similar, yellow millet being greatly preferred. Four of these birds were tested and, although the results were very marked, there was one complication. During the day-to-day testing of the seven-day experiment, it was noticed that the strong preference for yellow millet gradually became even stronger. The cause of this change was not clear. It was thought that it might be the result of the birds becoming more selective now that their different types of seed were presented in different bowls, instead of as a mixture in one bowl. But this, if true, should have applied to most of the species tested, which it did not. In order to test whether this increased preference persisted a second set of tests was made. This was done after a lapse of time of thirty-four days, during which time the finches were always given their seed in the separate bowls.<sup>1</sup> The results of the second experiment show that the increased preference did persist. The results for both experiments are given below :

<i>Experiment.</i>	% CANARY SEED.	% WHITE MILLET.	% YELLOW MILLET.
<i>a</i>	11.8	12.8	75.4
<i>b</i>	4.4	1.3	94.3

<sup>1</sup> This also applies to other species in which there was a lapse of time between two experiments.

4. CRIMSON FINCH *Pæphila phæton* (*Neochmia phæton*)

Only one individual (a male) of this rare species was available for testing. It was extremely constant in its preferences from day to day, and ate practically nothing but yellow millet.

CANARY SEED, 3.4%. WHITE MILLET, 7.8%. YELLOW MILLET, 88.8%.

5. ZEBRA FINCH *Pæphila guttata* (*Tæniopygia castanotis*)

Eight birds were tested (four males and four females). Males and females were tested separately and an unexpected difference in seed preference was found between the sexes. Both the male experiment and the female experiment were repeated and these second testings also showed the same difference :



Experiment.	% CANARY SEED.	% WHITE MILLET.	% YELLOW MILLET.
Males (a)	3.3	39.8	56.9
Males (b)	3.3	40.7	56.0
Females (a)	3.7	21.4	74.9
Females (b)	2.1	29.1	68.8

It will be seen from these results that the difference between the sexes appears to be only one of degree, yellow millet being more strongly preferred by the females. However, an examination of the day-to-day preferences reveals that it was caused in a rather special way. The females were fairly constant in their preferences, but the males were not. Instead of showing slightly less preference for yellow millet on each day, as the total figures might lead one to believe, the males varied their preferences considerably from one day to the next. On three out of seven days they showed a distinct preference for white millet, while on the other four days they showed a preference for yellow millet similar in extent to that of the females. This apparently erratic behaviour had the general effect of reducing the level of their overall consumption of yellow millet. Sudden day-to-day changes of this sort were found in a number of species and their significance will be discussed later.

#### 6. THE LONG-TAILED GRASSFINCH *Pæphila acuticauda*

This is one of the larger grassfinches, but despite its size it shows a marked preference for yellow millet. One pair of these birds was tested. They belonged to the red-billed race of this species, known as Heck's Grassfinch. Two experiments were carried out because, although the day-to-day results of the first were very constant, testing was unavoidably cut short after only five days instead of the usual seven. A typical seven-day experiment was then carried out after a lapse of time of sixty days. Here are the results of both testings :

Experiment.	% CANARY SEED.	% WHITE MILLET.	% YELLOW MILLET.
a	27.1	8.9	64.0
b	17.5	17.4	65.1

It is clear from these results that, although the strong preference for yellow millet remains constant from experiment to experiment, the slight preference for canary seed over white millet, which exists in the first, disappears in the second. Such a change as this, occurring in a species with a constant daily preference, is of importance and will be discussed later.

#### 7. STAR FINCH *Pæphila ruficauda* (*Bathilda ruficauda*)

Only one individual of this species was available for testing. Its preferences were similar to those of the male Zebra Finches. It showed a slight overall preference for yellow millet, but day-to-day results



varied considerably. Like the male Zebra Finches it preferred white millet on three out of seven days and yellow millet on the other four. As before, the amount of canary seed eaten was constant and rather small :

CANARY SEED, 14·0%. WHITE MILLET, 38·8%. YELLOW MILLET, 47·2%.

#### 8. RED-BROWED FINCH *Estrilda temporalis* (*Ægintha temporalis*)

The inclusion of this species amongst the grassfinches requires some explanation, for it is normally thought of as a waxbill and often goes under the name of Sydney Waxbill. It is included in genus *Estrilda*, which contains most of the typical waxbills, by Delacour, and for the sake of uniformity I have used his scientific name for the species here, despite the fact that I do not agree with it. This, and other related taxonomic problems, will be discussed fully in a later publication and for the present it must suffice to say that its affinities with the grassfinches appear to be more fundamental, if not so immediately obvious, than those with the waxbills.

Four birds of this species were tested. Two full experiments were carried out with a gap of thirty-four days between the first and the second. No seeds were strongly preferred or strongly non-preferred but, within each experiment, the order of preference remained the same on each day. Strangely, however, this order was not the same in both experiments. In the first, yellow millet was preferred to canary seed and canary seed was preferred to white millet on each of the seven days. But in the second, canary seed was preferred to yellow millet and yellow millet was preferred to white millet. Again, this was so on every day of the experiment. As with the last species, these birds showed a change, with a lapse of time, from one stable and regular preference to another equally stable and regular preference. The total figures are as follows :

Experiment.	% CANARY SEED.	% WHITE MILLET.	% YELLOW MILLET.
<i>a</i>	32·6	20·8	46·6
<i>b</i>	47·8	15·5	36·7

#### C. MANNIKINS (*Amadinæ*).

##### 9. BRONZE MANNIKIN *Lonchura cucullata* (*Spermestes cucullatus*)

On the whole the mannikins are larger birds than either of the waxbills or the grassfinches. The Bronze Mannikin is an exception to this, however, being little more than the size of a small waxbill. It is not surprising therefore that it shows a marked preference for yellow millet. Twenty birds were tested, in five groups of four. The results of the first four experiments are as follows :



Experiment.	% CANARY SEED.	% WHITE MILLET.	% YELLOW MILLET.
<i>a</i>	6.9	16.8	76.3
<i>b</i>	4.8	18.7	76.5
<i>c</i>	7.3	25.5	67.3
<i>d</i>	6.9	41.4	51.7

It will be seen from these results that the different birds, although showing slight differences in the extent of their preferences, nevertheless always show the same order of preference. The difference in degree of preference for white millet, however, between the four birds in experiment *a* and those in *d*, is marked enough to indicate the limitations of specific predictions concerning seed preferences.

A fifth group of four birds was tested in a large unheated aviary, with the following results :

Experiment.	% CANARY SEED.	% WHITE MILLET.	% YELLOW MILLET.
<i>e</i>	20.4	30.2	49.4

Although these birds also showed the same order of preference as the other four, there is a shift in degree in the direction of the larger seeds. Whether this was due to the temperature difference or not, is not known.

These birds showed very regular preferences from day to day.

#### 10. BLACK-BREASTED MANNIKIN *Lonchura bicolor* (*Spermestes bicolor*)

This species contains a number of races, some of which have been considered as separate species in the past, but which have now been lumped together by Delacour. The one pair of birds which was tested here belong to the race (old species in this case) known as the Rufous-backed Mannikin, *Lepidopygia nigriceps*. All the races of the Black-breasted Mannikin are closely related to the previous species, the Bronze Mannikin, and the following results show that the pair tested here has similar seed preferences :

CANARY SEED, 9.7%. WHITE MILLET, 33.3%. YELLOW MILLET, 57.0%.

This order of preference was stable from day to day.

#### 11. CHESTNUT-BREASTED MANNIKIN *Lonchura castaneothorax* (*Donacola castaneothorax*)

This species is a typical mannikin, being more heavily built. Despite this, however, the four birds tested showed a seed preference similar to the smaller Estrildine species, having a strong liking for yellow millet :

CANARY SEED, 8.6%. WHITE MILLET, 26.4%. YELLOW MILLET, 65.0%.

The order of preference for the three seeds was the same on each of the seven days of the experimental period, but the preference for yellow millet was more extreme on some days than others.



12. SPICE FINCH *Lonchura punctulata* (*Munia punctulata*)

Four individuals of this species were tested. The results showed erratic variations from day to day, although canary seed was strongly non-preferred on all but one day.

CANARY SEED, 11.8%. WHITE MILLET, 37.2%. YELLOW MILLET, 51.0%.

13. STRIATED FINCH *Lonchura striata* (*Munia striata*)

Another typical mannikin, also with erratic day-to-day preferences. Here, in two seven-day experiments, using four birds, no clear-cut results were obtained concerning the two millets. White millet was preferred to yellow millet as often as yellow was to white. But canary seed was, on each of the fourteen days, strongly non-preferred :

<i>Experiment.</i>	% CANARY SEED.	% WHITE MILLET.	% YELLOW MILLET.
<i>a</i>	4.9	37.1	58.0
<i>b</i>	7.8	48.9	43.3

There was a lapse of time of thirty-four days between the two experiments.

14. BENGALIAN FINCH *Lonchura domestica*? (*Munia domestica*)

The origin of this domestic species is obscure and its ancestry will be discussed more fully in a future paper. However, it is apparently closely related to the last species and its seed preferences are very similar to those in experiment *b* above :

CANARY SEED, 6.7%. WHITE MILLET, 48.9%. YELLOW MILLET, 44.4%.

Furthermore, the two birds tested showed exactly the same kind of day-to-day variations, preferring one millet one day and the other the next, but always taking very little canary seed.

15. SILVERBILL *Lonchura malabarica* (*Euodice malabarica*)

There are two races of Silverbill, the African and the Indian, which used to be thought of as two species (called *Euodice cantans* and *malabarica* respectively). The three birds used in the tests here belonged to the African race. They were tested in unheated quarters. Their day-to-day variations in seed preference were more erratic than those of any other species tested. A second experiment was carried out, which indicated a greater regularity between experiments as there was within them.

<i>Experiment.</i>	% CANARY SEED.	% WHITE MILLET.	% YELLOW MILLET.
<i>a</i>	23.4	36.1	40.5
<i>b</i>	13.6	38.4	48.0



16. CHESTNUT MANNIKIN *Lonchura ferruginosa*

This species embraces a number of races, some of which have been considered as separate species in the past. The best known of these are the Black-headed Nun and the Tri-coloured Nun (old names, *Munia atricapilla* and *malacca*, respectively). The four birds tested here were members of the Tri-coloured race. Their preferences were constant from day to day, white millet being the strong favourite :

Experiment.	% CANARY SEED.	% WHITE MILLET.	% YELLOW MILLET.
a	24·1	46·0	29·9
b	24·1	49·6	26·3

Two seven-day experiments were carried out and, as the above figures show, the preferences were also extremely constant between testings as well as between tests.

17. JAVA SPARROW *Padda oryzivora*

This is even larger than the last species and is not only one of the largest mannikins, but is also one of the largest of all the Estrildines. Four birds were tested and they showed no marked preference or non-preference :

CANARY SEED, 30·6%. WHITE MILLET, 26·3%. YELLOW MILLET, 43·1%.

## D. OTHER SPECIES (Fringillidæ).

In addition to the seventeen species of Estrildine Ploceidæ mentioned above, three non-Ploceid species of finch were also tested for comparison and the results for these are given below. All three happened to be members of the family Fringillidæ and are therefore not closely related to the Estrildines.

18. CUBAN FINCH *Tiaris canora*

This small South American finch is about the size and build of one of the smaller waxbills and it is not surprising therefore that its seed preferences are very similar to those of the small Estrildines. It is a New World ecological counterpart of the smaller Estrildines, the latter being confined to the warmer regions of the Old World. Its seed preferences are extremely constant, both within and between experiments, and show very large figures for yellow millet :

Experiment.	% CANARY SEED.	% WHITE MILLET.	% YELLOW MILLET.
a	9·6	10·2	80·2
b	8·2	10·2	81·6

The two birds that were tested were in an unheated aviary and it is interesting that, despite this, they showed little interest in the canary seed. (For it will be recalled that the unheated Bronze Mannikins ate more canary seed than did the heated ones.)



19. POPE CARDINAL *Paroaria larvata*

This species is a great deal larger than any of the foregoing and it was expected that the four birds which were tested would show a marked preference for the larger canary seeds. This was far from the truth, however, as the following results show :

CANARY SEED, 2.5%. WHITE MILLET, 51.1%. YELLOW MILLET, 46.4%.

The results for canary seed were extremely constant, hardly any being eaten on any day of the experiment. No preference was shown for one millet over the other, each making up about half the diet. Like the last species, these birds were kept in unheated quarters.

20. RED-HEADED BUNTING *Emberiza icterica*

This Indian Bunting, although not as large as the last species, is much larger than most of the Estrildines. As in the case of the last species, it was expected that the pair of buntings tested would show a stronger preference for the larger canary seeds. Unlike the last species, they did so :

CANARY SEED, 66.7%. WHITE MILLET, 21.8%. YELLOW MILLET, 11.5%.

These birds, which were tested in an unheated aviary, showed regular preferences from day to day.

## DISCUSSION

For purely avicultural reasons, the seed preferences for each species given above, are of interest in themselves. But zoologically, it is worthwhile to ask why the different finch species should prefer different proportions of the three types of seeds. The various possibilities will be considered one by one :

## A. Food-variety Mechanism

It might be argued that such differences are simply the result of a feeding behaviour mechanism that prevents a bird from feeding too long on the same kind of seed and which thus ensures a varied diet. To some extent this does seem to be true. There are in some cases quite striking changes in certain preferences from day to day, or from experiment to experiment, and changes such as these do not seem to be explicable in any other way. But over and above these there are much more basic specific differences in feeding which could certainly not be smoothed out by continued testing until all the birds had passed through all their supposed feeding moods. Also, most of the species tested showed rather constant preferences.

## B. Seed Chemistry

It might be that chemical differences between the seeds are important and that certain species have digestive systems suited to one



type of seed and others to another. The following analyses of seed-content are relevant here :

Morse (1926) and Buttner (1951, 1952) give seed-content analyses for canary seed and millet, but the results of these two authors differ slightly. Because of this, and because the different samples tested by Buttner also vary slightly, the percentages are only given here to the nearest whole number (with the exception of calcium and phosphorus). Morse's results, which are as follows, do not distinguish between the two kinds of millet :

	Water.	Protein.	Carbo- hydrate.	Fat.	Mineral.
CANARY SEED	14	13	52	5	2
MILLET	13	15	61	5	2

Buttner gives figures for both kinds of millet. Where data for more than one sample is available, averages are given here :

	Water.	Protein.	Carbo- hydrate.	Fat.	Mineral.	Calcium.	Phosphorus.
CANARY SEED	10	15	54	6	5	0.050	0.393
WHITE MILLET	11	13	71	1	2	0.014	0.333
YELLOW MILLET	10	11	63	4	3	0.026	0.287

Although a scrutiny of these figures may give the impression that there are considerable differences in the proportions of the contents of the three seed types, such differences appear very slight when the contents of other kinds of seeds are studied. For example, maw seed contains 40 per cent fat and only 12 per cent carbohydrate ; red rape also contains 40 per cent fat and only 10 per cent carbohydrate ; linseed contains 25 per cent protein, and so on. In fact, if the contents of a wide variety of seed types are studied, it emerges that no three more chemically *similar* seeds than canary seed and the two millets could have been selected. In view of the wide range of seed preference differences found in the twenty species tested in the present investigation, it seems highly unlikely that the minor chemical differences between the three seeds used could have played an important role. It should be stressed, however, that it would be most interesting to repeat such experiments, using a much wider range of seed types with greater chemical differences.

1. Seed Hardness

Since, in the present investigation, the seed preference differences cannot be explained in relation to the chemical properties of the seeds, the physical properties of the latter must next be considered. The first such property to be studied was the hardness of the three kinds of seeds. Thirty individual seeds of each type were selected at random and each was crushed to find the pressure necessary for cracking it. The results of these tests are given in Fig. 1. The abscissa represents



hardness in terms of pounds pressure required for breaking the seed. The ordinate values show the numbers of seeds which were of each particular hardness. It is clear from this that the yellow millet is harder than the canary seed and that the latter is harder than the white millet. Therefore, if seed hardness is an important factor, it must

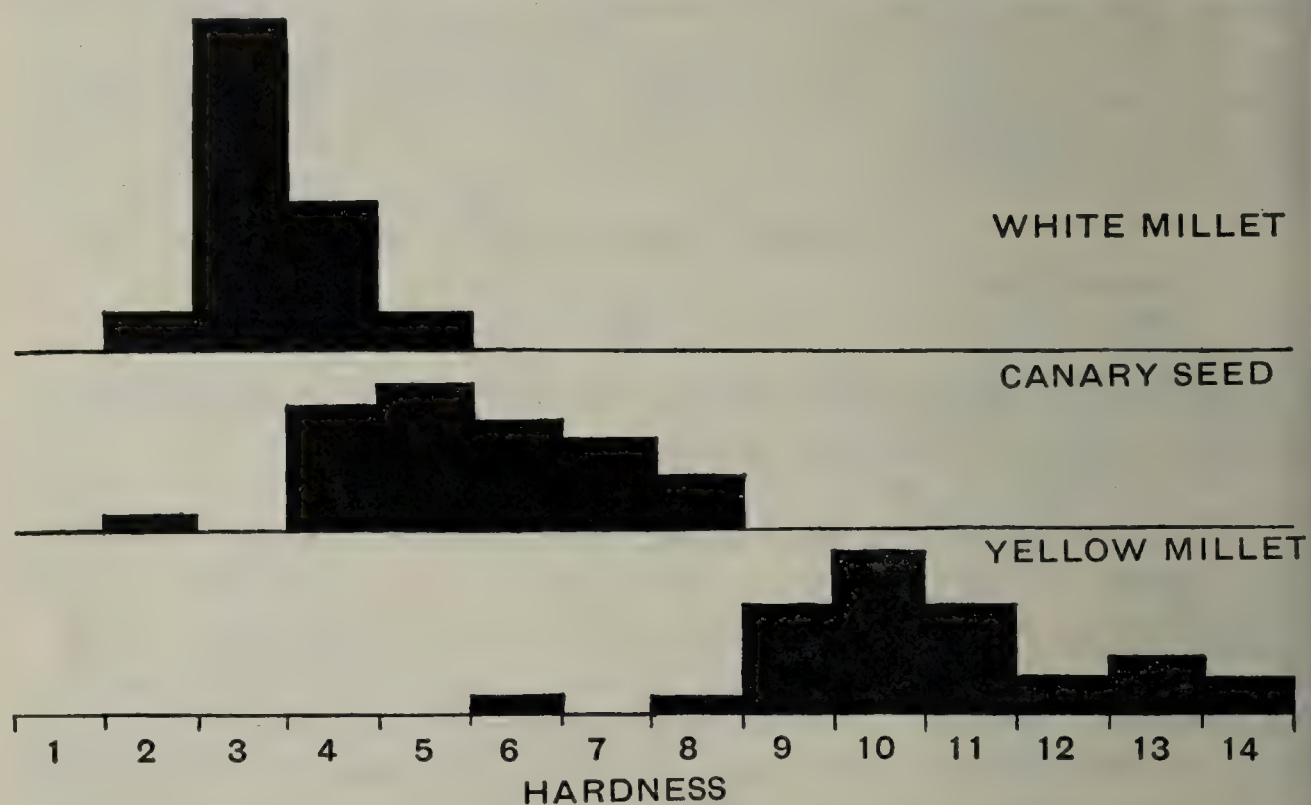


FIG. 1.

follow that those species showing the strongest preference for yellow millet must have the strongest jaw muscles. Unfortunately, no evidence is available for the relative strengths of the jaw muscles of the twenty species studied, but the fact that it is the most minute and apparently the most frail species which show the strongest preference for the hardest seed would seem to exclude this factor in the present investigation. There is, it must be admitted, no *a priori* reason why a *smaller* finch should necessarily be bound to have *weaker* jaw muscles, but, in view of the next factor to be discussed, this last point does not seem to be particularly relevant in the present case. Also the specific preference orders are much less compatible with the order of hardness of the seeds than with this next factor, which is seed size.

#### D. Seed Size

It has already been pointed out that the canary seeds are larger than the white millet seeds and that the latter are larger than the yellow millet seeds. It has also been mentioned that avicultural rules for feeding different types of finches are based on the rough assumption that the larger species will prefer the larger seeds. In order to test this possible correlation more precisely, it was necessary to find some single measure of seed-size preference for each species. Since the weights of the individual seeds used reflect their sizes, and since it is



easier to measure weight than size in this case, the former measure was selected. Five samples of each type of seed were selected at random and one gram of each sample was weighed out.<sup>1</sup> The number of seeds in each gram weighing was as follows :—

CANARY SEED.	WHITE MILLET.	YELLOW MILLET.
119	214	358
118	210	348
118	204	358
118	214	352
120	206	356

By taking average figures for each type of seed from the above, it is possible to calculate, from the percentage preference figures given earlier, exactly how many seeds each species had to eat to obtain one gram of food. (Average preference figures were used where more than one experiment had been carried out.) For example, if a very small species was eating 100 per cent of the small yellow millet, it would have to eat about 350 seeds in order to obtain one gram of food ; but if a much larger species was eating 100 per cent of canary seed, it would only have to eat about 120 seeds to get the same amount. In fact, the species with the strongest preference for the smallest seeds, which is the Avadavat, has to eat 336 seeds in order to obtain one gram, while at the other end of the scale, the Red-headed Bunting, which shows the strongest preference for the largest seeds, only has to eat 166 seeds per gram. All the other eighteen species range somewhere in between these two extremes and the full data are given in the following table :—

SPECIES.	A. SEED SMALLNESS.	B. BEAK SIZE.	C. BODY WEIGHT.	D. FOOD INTAKE.
Avadavat . . .	336	8.5	8.9	2.5
Crimson . . .	335	9.0	9.4	2.3
Bicheno . . .	325	9.0	10.1	2.5
Cuban . . .	318	8.0	8.5	2.7
Redear . . .	305	8.0	6.8	2.4
Zebra . . .	299	9.7	12.7	3.1
Chestnutbreast . . .	296	10.5	14.9	4.2
Bronze . . .	294	9.6	9.2	2.9
Blackbreast . . .	283	9.0	9.8	2.5
Longtail . . .	282	10.5	14.7	3.0
Cardinal . . .	275	15.0	49.7	5.6
Spice . . .	273	11.5	14.0	3.8
Striated . . .	272	11.2	11.5	2.9
Bengalese . . .	268	11.0	12.1	4.4
Silverbill . . .	257	10.0	13.3	4.3
Star . . .	250	10.0	10.6	3.3
Java . . .	244	16.0	25.4	5.1
Redbrow . . .	234	9.7	10.9	2.8
Chestnut . . .	229	12.0	14.3	4.5
Bunting . . .	166	13.0	24.2	5.6

<sup>1</sup> As there were so many millet seeds per gram,  $\frac{1}{2}$ -gram weighings only of these were taken and these have been doubled here.



The species are arranged in an order based on their preference for "seed smallness" (= number of seeds eaten to obtain 1 gram of food). Two measures have been selected to give information about "bird size", and the figures for these are also included in the above table. They are, firstly beak size, and secondly, body weight. The former (beak length) is given in millimeters and the latter in grams. Both represent average values for each species and both are the result of examinations of all the individuals used in the present study. The average food intake in grams per bird per day is also given for each species in the above table.

The correlations between the various columns of the table require statistical analysis. If seed size is the important factor controlling differences in seed preferences, then it would be expected that column A would be inversely correlated with columns B and C. However, despite the fact that it is body weight (C), rather than beak size (B), that is probably more closely correlated with the intuitive concept of "bird size", it is nevertheless more reasonable to expect the beak size to be more intimately connected with the seed preferences. Since there is, in any case, bound to be a rough correlation between body and beak size, the rough concept of bird size is undoubtedly valid enough at a crude level. But with the aid of statistical analysis, the present data can show the relative strengths of the inverse correlations between A and B, on the one hand, and A and C on the other.

Furthermore, just as one would expect a better correlation between A and B than between A and C, so one would expect a better correlation between D and C than with A and C (i.e. one would expect primary correlations between food intake and body weight on the one hand and seed size preference and beak size on the other, but only secondary correlations between other pairs of the four measures).

The following table shows the correlation coefficients obtained between A and B, A and C, and C and D, and also the levels of statistical significance which each represents :—

Relationship.	Positive or Negative	Correlation Coefficient	Level of Significance
A and B .	—	·5428	·02
A and C .	—	·3539	(Not significant) > ·1
C and D .	+	·7899	·001

From these figures it is clear that the foregoing predictions are in general borne out by the present data and that, under the controlled



conditions of the experiments, *the size of the beak of each species was correlated with its seed preferences.*

Also, the correlation between seed preference and beak size is not only much better than that between seed preference and body weight, but the latter correlation is not itself even statistically significant. The correlation between body weight and feeding rate is, however, highly significant.

Finally, looking again at the specific preferences, it is noticeable that a few species are markedly atypical as regards the relationship between their beak size and their particular seed preferences. For example, the Pope Cardinal and the Red-browed Finch show rather unusual preferences and a skeletal examination of the palatal structure of these two species might be rewarding.

#### COMPARISON WITH OTHER SPECIES

A number of investigations have been made in the past into the question of the possible relationship between differences in beak size and their correlation with differences in food preference.

Lack (1947), in his study of the Galapagos Finches, noted the existence of differences in beak size between closely related species which ate the same general type of food. It was clear, however, that the larger-beaked species preferred the larger fruits and seeds and that the smaller-beaked species consumed mostly the smaller seeds. For example, Lack states (p. 61) that “. . . we observed that the large, hard fruits of the manzanilla *Hippomane mancinella* are taken freely by the large *Geospiza magnirostris* and the medium *G. fortis*, but rarely if at all by the smaller *G. fuliginosa*; on the other hand, certain small seeds, notably of grasses, form a staple food of the small *G. fuliginosa*, but are taken less commonly by the medium *G. fortis*, and rarely if at all by the large *G. magnirostris*.”

Here, as in the present investigation, an overlap exists between the foods of the various species so that although the diets are qualitatively the same or similar, they nevertheless differ quantitatively.

More recently, Hartley (1953), Gibb (1954), and Snow (1954) have shown that different species of tits may have similar diets but that competition for food is reduced as a result of each species specializing in a different preferred type of food. These differences in preference, like the ones recorded in the present paper, are correlated with differences in beak size.

An experimental study of the pecking reactions of newly hatched domestic chicks, turkeys, and Lapwings has been made by Curtius (1954), in which the young birds were offered seed-models of different shapes and sizes. No preferences were discovered for any of the different shapes used, but it was found that the Lapwings preferred to peck



at small models (1 mm. size), the chickens at medium-sized models (2.5 mm.), and the turkeys at large models (5 mm. size). The author concludes that "there is consequently a proportion between the dimensions of the bill and the size of the preferred object", and also that the different size preferences are inborn.

Although this last study only deals with three species which are quite unrelated, it is nevertheless very important since it reveals that food size preferences can exist without any previous experience of the different food objects. Also, since the birds only pecked at flat models of food objects, instead of being allowed to eat real seeds, they could not have been influenced in their preferences by such factors as seed chemistry or seed hardness.

#### CONCLUSION

The present study reveals that, when twenty different species of finch are offered *qualitatively* the same seed diet, they may nevertheless show *quantitatively* different feeding preferences and that these differences are primarily correlated with differences in beak size, the birds with the larger beaks preferring the larger seeds. This correlation is far from perfect, however, and other less important factors also appear to be operating. Exactly what these latter are is not yet certain, but seed hardness does not appear to be one of them.

Ecologically, these results are very suggestive, but the artificiality of the circumstances in which they were carried out must not be overlooked. In the wild, the birds would have a much wider variety of both seeds and other types of food and only detailed and widespread crop analyses would give the full ecological answer. Nevertheless, the present results reveal that finches with slightly different sized beaks *could* live together in nature and eat qualitatively the *same* types of seeds, but without seriously competing for food.

Aviculturally, the results show that beak size is a good rough guide to the seed requirements of a species, but that it is not infallible. Also, body weight (and therefore the intuitive impression of "bird size") is of little value in this respect, except at the very crudest level. Body weight is, however, a very good indication of the food intake of a species. In general, the rough seed proportions advocated for the various species by previous authors are satisfactory, but in some instances they do not compare at all well with the present findings. To safeguard against inefficient feeding, a new species should either always be given the different seed types in separate containers, or its special preferences should be tested in the manner described here. Use of the standard commercial seed mixtures may, in many cases, not only involve the wastage of the non-preferred seeds, but may also result in accidental preferred-seed deprivation.



## ACKNOWLEDGMENTS

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## REARING OF THE CAPERCAILLIE IN CAPTIVITY

By Professor J. H. MARCHLEWSKI (Kraków, Poland)

Experiments were started with eggs taken from nests found in the wild. The eggs were transported to the laboratory by train or by car, in a basket under a foster-mother. This way of transport was by no means harmful to the developing embryos and the hatching of the Capercaillie chicks was always normal. At the first sign of pecking at the egg shells, the eggs were removed to a still-air incubator, for in some cases the foster-mother (a domestic hen) will kill the newly-hatched Capercaillie chicks. The chicks are always sturdy and lively just after they get dry ; their down is yellow with brown markings, and the tarsi and nostrils are thickly covered with down. The cocks can be distinguished at once when carefully examined with a magnifying glass, as they have a broad naked area above the eye, whilst in the hens this area is narrower. In a single brood, which is nearly always eight chicks, in some cases there are more cocks and in others more hens. In one case a peculiar chick was hatched ; it had grey down instead of yellow, and the colour was very like the grey markings of the common European sparrow. Never before or since have I seen a Caper chick like this.

The period of incubation of Capercaillie eggs is twenty-six days. This fact was confirmed twice by my own experiments with the eggs of a Capercaillie hen reared in captivity. The chicks when hatched were kept in an electric brooder, some of them on soil taken from a wood, and some on a wire-netting floor. The use of the foster-mother (especially a domestic hen) proved to be unpractical and even dangerous.

The chicks were fed from the first day with ant pupae, hard-boiled egg, and crushed green peas. Some larvae of *Tenebrio molitor* and other small insects were given occasionally. In some cases the food must be held in forceps in front of the beak of the chick, until it learns to eat from the tray. All sorts of fruit, such as cherries, etc., are highly recommended. Quartz grit also should be supplied in quantities. When the chicks are about four weeks old, they start to take a very different kind of food ; chopped carrots and cabbage, unripe maize, bread, wheat, delicate shoots of grass, etc., are taken very willingly. When they are a hundred days old the cocks are nearly as big as the adults, but their plumage is paler ; at this time they start to eat conifer needles.

Mortality amongst the Capercaillie chicks reared in captivity is very high, and it seems to be higher in cocks than in hens. Even the cocks which survive about four months very often die after that time.





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COCK CAPERCAILLIE DISPLAYING ON THE GROUND.

The first part of the "song". (This bird was raised in captivity.)



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CAPERCAILLIE HEN. (RAISED IN CAPTIVITY.)

To face p. 288.





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CAPERCAILLIE CHICKS 5 DAYS OLD.



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COCK CAPERCAILLIE THREE WEEKS OLD.

To face p. 289.



I observed this during three years of experiments. I do not really know what may be the cause of this, for bacteriological and parasitological investigation of the dead birds were entirely negative. Post-mortem examination revealed symptoms very similar to those of "blackhead". In my latest experiment I used some arsenical compounds as a preventive measure, and managed to raise a cock Capercaillie to the adult stage, and this cock started his display in April of the following year. It was not, however, performed early in the day as in the wild state, but as late as 10 or 11 a.m. The "song" was quite normal, and its third part, which is described in Poland as the "uncorking of the bottle" was very distinct. The mating with a hen reared two years earlier was quite normal; coition takes place only when the hen crouches down and makes flapping movements with her spread wings. Each hen which was reared in my aviary laid five eggs in the third spring of her life. In the fourth spring, eight eggs were laid. All the eggs were fertile, and all the chicks were hatched, but not one of them was reared to maturity.

Rearing experiments with the Caper in England were carried out in 1827. A pair of these birds was imported from Sweden, but the hen died before the steamer *Montrose Bay* reached land. A domestic hen was mated with the cock Capercaillie, and coition took place. From several eggs laid by the hen, one hybrid was hatched, but died the next day. In 1829 another pair of Capercaillie was imported into England, and several young were hatched, but they all died in different stages of growth. These experiments were described by the Polish amateur naturalist, St. K. Pietruski, *Jahresschrift d. Oësterr.-Gal. Forstvereins*, Kraków, 1859, who was so interested that he made a journey to England to see them. As is well known, the stock of the Capercaillie now existing in Scotland is descended from a few adult birds imported from Sweden in 1837 and 1838.

The Capercaillie in Poland is protected by the game law. Only the cocks may be shot and only for a short period of the year, namely in spring at the "leks". The "leks" are carefully observed, and when there are severe fights amongst cocks some of them may be shot. This method has proved to be very beneficial for the preservation of the species, the more so as the hens are absolutely protected, and the collection of eggs is forbidden, with the exception of a few for scientific purposes. In this way, the mating behaviour of the bird is fairly well known, and his peculiar "song" has been described in detail. The display actually begins in the evening; the cocks fly to the "lek" and roost on the trees for the night, and occasionally one or two utter a few notes of the "song". The hunter is present at the "lek" in the evening, but is not allowed to shoot. He only observes, and tries to remember the place where the birds roost. This is called the "setting of the cock". When it becomes quite dark, the hunter



withdraws for some two or three miles, and spends the rest of the night beside a small fire. As early as 2 a.m. the display begins. The hunter carefully approaches the "lek" and listens to the nearest cock. He can tell from the intensity of the song whether the bird is old, very old, or young. The old cocks, which are usually very aggressive, must be removed from the "lek". When the hunter approaches so close that the "deaf note" can be heard distinctly, he moves only while it lasts. In the few seconds during which the "deaf note" can be heard, the bird is absolutely deaf, but he can see very well. The hunter jumps towards the bird and the noise he makes in cracking the ice or the dry branches never disturbs the "singing" bird. The slightest noise made during other phases of the "song" will put the bird up at once; it will also take wing immediately when it sees some strange shape. The hunter must get very close to the bird, for shot guns only are allowed in this sport.

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## BREEDING BLUE RING-NECKED PARRAKEETS IN CALIFORNIA

By DAVID M. WEST (Montebello, California, U.S.A.)

Probably one of the most satisfying breeding events of the 1955 season was the successful rearing of two young blue Ring-necked Parrakeets. The parents were blues bred in 1952. During the 1954 season they were seen to mate several times and, although the hen made a scrape in a large nest-box, she did not lay. At this time (1954) the cock did not yet have his ring but he appeared fully mature and quite capable of nesting.

During the 1955 season the pair began seriously displaying and calling in early February. In March the pair did not seem nearly so interested as they had been in February, and the cock made only spasmodic attempts to feed the hen and display to her. During these early weeks in March the hen continued to visit the nest-box and ejected the greater part of the wood chips in it. The nest-box was a large rectangular box about 4 feet high and 16 inches wide and 16 inches deep. Because the hen (during the 1954 season) appeared to be a nervous sitter the box was hung slightly back in the shelter and against a north wall of their aviary, which runs east and west and is 18 feet long, 4 feet wide, and 8 feet high. It was felt that this secluded nest would give her some feeling of security although it frustrated me since it was nearly impossible to see the nest without entering the aviary.

About the middle of March I noticed that one of the primary flight



feathers had been dropped and estimated that this might indicate an early moult and the end to any breeding attempts for the current season. Also pointing to this conclusion was the steadily diminishing attempts by the cock to feed or display to the hen.

On about 20th March I noticed the hen at the box entrance while I was feeding in the early afternoon. I had not previously actually seen her in the box, although the ejected wood chips indicated she had been in the box at various times. Upon seeing me enter an adjoining flight she flew away from the box but subsequently returned to the box in about five minutes. That evening I believed she stayed on the nest and during the next day sat steadily. To avoid any actions that might discourage her the pair were left as nearly alone as possible from this date on.

Following 20th March the hen sat steadily—if lightly. Unfortunately the cock would warn her by calling of any unusual happening with the result that she would immediately come out and survey the situation for herself. Whenever it would be necessary for me to enter their flight the hen would almost always come off—but as she always returned to the nest within a few minutes I hoped for the best.

During these three weeks of incubation the cock was never observed to enter the nest or even to alight on it. From a near-by perch he would watch the nest, but apparently he was not allowed to enter the nest or to approach the entrance. The hen would usually come off early in the morning around 7.30 a.m., and again in the early afternoon about 4 p.m. From my limited observations she appeared to come off without being called by the cock. As soon as she was off the cock began feeding the hen—or at least attempting to do so. This was an interesting procedure as she appeared only to tolerate his actions—and would allow him to feed her for a minute or so and then would drive him away—only to permit his return in a few seconds for another feeding when she would again chase him away. Fortunately the cock appeared to tolerate and indulge these wifely vagaries and all continued smoothly.

On 14th April the first sound of youngsters was heard. This was, of course, an encouraging sound and it was now felt that half the battle was won.

To encourage maximum feeding of the youngsters the following items were included in the diet provided for the parents. The usual grains, such as canary, millet, oats, and sunflower, were augmented by as much hemp seed as the parents would eat. Past experience has shown that many parent birds while feeding chicks will eat hemp in preference to any other grain. Possibly it is easier to crack than sunflower, canary, or millet. A large orange, apple, and a fresh ear of corn and soaked bread were also given each day. Finally, *poa annua* and *pyracantha* berries were given for greens, as the parents



were very fond of these berries. Unfortunately, here in Southern California this grass (*poa annua*) only thrives in the winter months and by April it is pretty well gone. Because of this chard was also given for greens, and an occasional branch of some deciduous fruit tree such as peach or apricot.

Knowing that one can sometimes pretty well judge the number of young by the amounts of food consumed by the parents, I tried to observe carefully how much time the cock was spending at the seed dishes. His two preferences seemed to be the apple and the fresh ear of corn for these were always the first eaten. After these the greens were eaten and finally the various grains. Judging by the amounts of food consumed it was felt that there were probably only two or three youngsters in the nest. Although the cock ate quite a bit, the hen during the first ten days was not seen any more frequently than during incubation, which was not considered a particularly encouraging sign. Of course, it was quite possible that she did come off the nest earlier in the mornings and was not observed by me.

After the second week was over the hen began to spend some time away from the nest during the day. She continued her old preference for the fresh corn, and as usual wasted as much of it as she actually ate. They both appear greatly to enjoy ripping the kernels apart and, as with most psittacine birds, waste a great deal of the food. The cock fed the hen very frequently and after the first week the cock began to enter the box and by the tenth day the youngsters were easily heard while being fed by the parents.

After the fourth week the cock no longer fed the hen very often and instead entered the box to feed the young. At about this time the hen caused some consternation because she again became very short tempered with the cock. However, as this is apparently the curse that all male Ringnecks must suffer, the blue male would merely sidestep these temper tantrums and all continued to go well.

Young Ringnecks stay in the nest-box for a very long period—an interminable one it seems when you are waiting to know how many young are in the box! I finally weakened and when the young were seven weeks old took a quick peek! The quick look revealed two well-feathered youngsters and a single egg in a corner of the nest-box. At this age the babies looked as if they might very well be able to fly, although the tail was a little short. The parents did not seem to mind the inspection—and shortly afterwards flew to the box and fed the young. During these last few weeks in the nest the cock fed the young every bit as much as the hen did. When either bird was in the nest feeding the sounds were quite audible.

On the estimated fifty-fifth day subsequent to hatching one youngster was observed looking at the world from the entrance to the box. However, it was not until the sixty-second day that the first youngster



left the box, and the second bird left the nest the following day. They were only slightly clumsy on the wing and appeared to be good birds. The bills were more salmon in colour than red, but other than this they resembled the parents in every detail. Quite needless to say they certainly drew looks of admiration from their parents and myself!

It is probably worth while noting that a second pair of blue Ring-necks, hatched in 1953, did get as far as a clutch of four eggs. Unfortunately they were all clear—which is something of a disappointment. With this pair the hen seemed more ready and capable of nesting than the cock bird did—though he did display very energetically for quite some time. His ring is just now coming in—and this bird is now about twenty-five months old. With a two-year-old pair of lutino Ringnecks the story was the same—great interest but they did not quite make the grade and only got as far as readying the nest. Here again the cock lutino is a two-year-old bird—and the red ring is just now beginning to show as he is completing his moult.

That some two-year-old Ringnecks are capable of nesting is shown by the fact that a split-lutino mated to a green hen nested and successfully hatched a single youngster from their clutch of three eggs. The really unusual thing here is the fact that the hen did not approve of any of the nest-boxes I provided and as a result she tunnelled under a box and made her nest on the ground. She did a very good job, too, for digging in our heavy adobe soil is no mean task. It was only bad luck that prevented them from rearing the youngster, which lived long enough to show that it would probably have been a lutino. Very heavy late rains made the ground too damp, and probably caused a chill, for the bird had a full crop when found dead. It will be interesting to see if this hen persists in nesting on the ground in preference to a box. The cock did not object, and on several occasions he was observed sitting with her in their unusual nest.

I hope that these notes will be of some help to our members—for although there are many references to the Ringneck and its colour phases in the Magazine, not many of them give details. This species is such a fine one for the collector that the details may be of some help to members wishing to breed Ringnecks. I should add that the breeding pair of blues did not pay the slightest attention to a young male Bourke's that accidentally slipped into their aviary from an adjoining flight one day while I was feeding. I could not use the net to catch the Bourke's for fear of frightening the sitting blue hen—so just decided to take a chance and leave the Bourke's in the pen with the blues. It worked out just fine for the blues completely ignored the Bourke's—even allowing him to eat in the same dish with them.

\* \* \*



## STUDIES ON GREAT CRESTED GREBES

By K. E. L. SIMMONS (Tilehurst, Reading, England)

Illustrated by Robert Gillmor

(Concluded from page 253)

## 6. NOTES ON SOME ASPECTS OF PARENTAL-BEHAVIOUR

*Both sexes assist in all the nesting processes . . . There is a definite division of labour in feeding the young. At first the young are mostly carried by one sex . . . and fed by the other, but after about a week the male and female tend to feed different young. All the young may go about together, they may all attempt to take food from the same adult; careful observation shows, however, that nearly always each parent deliberately feeds one or two young and no more, so that there is a definite distinction between "male's young" and "female's young" . . . Indeed, we have seen the male attack and drive away "the female's young" and vice versa.*

Harrisson and Hollom,

*The Great Crested Grebe Inquiry, 1931: 183-4*

While threat, courtship, soliciting, and copulation individually have their own special roles to play in the life of the Great Crested Grebe, they also possess a collective ultimate function of enabling the species to arrive at a state in which it can successfully reproduce its own kind. The hatching and rearing of the young are the most vital activities of all.

Comparatively little information is available in the literature, our most important sources being the *Grebe Inquiry*, *The Handbook*, and Hanzák's paper. Most of my own notes lie as yet undigested in field notebooks and much work still needs to be done. Therefore the present account is unfortunately only very brief and many points must go entirely or partly untreated.

*Incubation**General*

The female grebe lays her eggs at approximately 48-hour intervals. In appearance these are at first a dull white, but later they become stained by the damp nest material to varying shades of brown. Some I have seen have been a beautiful russet tawny colour. It takes from 2-3 days for the eggs to change in this way. The grebe's egg has, in fact, no less than three outer coverings: the original white surface is a chalky layer over the real blue shell and probably helps to keep out the damp, while the staining probably acts as camouflage. As I have examined comparatively few clutches *in situ*, it is best to quote the *Grebe Inquiry* on further points, as follows: "Of about one hundred records sent in, clutches of four were in the majority, three being also



numerous, several fives, and two sixes noted ; also ones and twos. Clutches of seven are very rare . . . The average of 100 eggs given by Jourdain is  $54.8 \times 36.7$ . Maximum  $62.7 \times 37.8$  and  $46.5 \times 39$  ; minimum  $46.5 \times 39$  and  $55.3 \times 34$  mm."

Real incubation may start as soon as the first egg is laid ; then the chicks hatch out at more or less regular 48-hour intervals. Often, however, the brooding of the first egg, and sometimes of the second, too, is as spasmodic as the premature-incubation on the empty nest (see p. 236). It is doubtful if this casual sitting has any real effect on the development of the embryo. My own observations have added nothing of importance to our knowledge on the actual incubation-period which the *Handbook* gives as 27–29 days, usually 28. Hanzák states that "In one case the fledglings hatched from the eggs already



Resting while brooding.

on the 22nd day, which is less than the period recorded in the literature". He gives no supporting details for this.

Both sexes sit in turn on the eggs, and at all the nests watched at Burghfield, once true incubation had started they were brooded almost continuously, except for a minute or two at nest-relief or if the birds were disturbed. At the nest watched by Rankin (1947)—whose book contains many interesting details of incubation routine, etc.—the parents were not so attentive, possibly on account of the heat. The posture of the incubating grebe varies. When used to all the different activity around and not alarmed, it spends a great deal of time merely resting in the pork-pie attitude on the nest. Otherwise, occasionally or regularly, depending on its peace-of-mind, the grebe may brood



with its neck held straight up, head turning now this way, now that. Much time is taken up, too, with preening and then the eggs have to be turned quite regularly and the nest material arranged. In order to turn its eggs the parent grebe stands up, curves its neck down and tucks its bill under them, one at a time, using the under mandible. Should an egg get misplaced on to the edge of the nest, it is retrieved in the typical way: the grebe rolls it back by hooking the bill under it. This habit obviously reduces loss through the birds' unavoidable clumsiness. Occasionally, as would be expected, eggs are knocked



The grebe turns and recovers eggs with the same movement of the bill.

too far for recovery and I have found submerged ones below the nest. Poulsen (1953) has studied this whole topic experimentally and in the Disney film *The Vanishing Prairie*, there is a shot of a Pied-billed Grebe retrieving an egg that had been carried away in the feathers around the brood-patch.

It is unusual for the sitting Great Crested Grebe to get off the nest to gather material, as did Rankin's pair. In fact, the incubating bird normally leaves the nest only when relieved by the mate. It obtains its own food during its off-duty periods and is not fed by the other. With regard to this question of "connubial-feeding", Miss Turner once stated quite firmly, but almost certainly incorrectly, that "When the hen was sitting her mate would swim to and fro during the day, sometimes returning with food for her . . .". When an adult does come to the nest with food or with a feather (see pp. 98-9) it brings such items for the newly hatched young and *not* for the mate. Often, of course, the chick may at first be inactive and hidden from



view and fails to respond to the offering. Thus, it is quite obvious that Rankin's female grebe brought a feather for the youngster and not for the male—"It was nearly half an hour before the female put in an appearance . . . She hustled in through the rushes carrying a small feather in her bill, which she proceeded to offer to her mate, uttering a gentle cooing noise meanwhile. What the purport of this little gift may have been it is difficult to say but . . . she may well have been seeking his approval of this small object. However, he appeared quite oblivious of the frantic appeals she was making to him, or even of her presence, and quietly busied himself with arranging reeds around the nest—principally on the side farthest away from her!" Similarly, Jones's (1955) record of a fish being brought—which he presumed was for the incubating bird which did not take it, of course—may be explained in the same way. It seems quite probable, also, that occasionally food is brought to the nest *before* the time of hatching—in response to the peeping of the unborn chick inside the egg.

The non-sitting grebe spends its time mainly in hunting for food (for itself!), in preening, in resting, and in visiting the nest. When hunting, it may have to leave the territory entirely, depending on the latter's size and situation in relation to open water (see also pp. 236–7). It rests in the territory, often not too far from the nest site, sometimes in the same patch of cover (if this is relatively extensive), but usually in full view in clear water, "on station" as it were. The nest is visited, on a roughly assessed average, about three times an hour. The off-duty bird usually only stays for a few minutes at most each time, often bringing, adding, or fiddling with nest material, especially if it wants to brood. As its free period lengthens it comes more frequently. If the mate does not get off the nest, the other soon goes away again—obviously it is not in the species' interest for both birds to advertise the position of the nest too much during the incubation period by staying there together too long at a time. Similarly, when the pair does change over, the relieved bird soon leaves. There is no demonstrative ritual at the time of relief either, though certain forms of behaviour do appear regularly, as will be described in more detail in the section below.

Various experiments on egg-retrieving, reaction to the moving of the nest and to differently coloured eggs have been done by Hanzák and Poulsen.

#### *Nest-relief and Settling Down on the Eggs*

In the majority of cases it is the off-duty grebe that initiates nest-relief by visiting the site. Only very occasionally does the incubating one leave before the other comes to the nest, in fact Pair A did not do this once during the whole of my long watch in 1952 (see below),



when over seventy reliefs were observed. However, the sitting grebe does have the final word, for the other cannot take its turn on the eggs until the nest is vacated.

During its later visits to the nest the free bird is obviously quite prepared to incubate should the mate give way. As time goes on the keener it becomes. Between spells of adding or arranging material, preening, or even resting uneasily, it approaches the nest closely and looks up intently, intermittently shaking its head and sometimes habit-preening as well. The brooding bird may go through much the same activities as its mate, preening when it does and head-shaking with it. Occasionally quite an intense ceremony occurs. However, if it still intends to go on brooding it often merely rests and ignores the other.

Only a little time after the beginning of the final visit (about 1-4 minutes as a rule) the sitting grebe gets up, waddles down from the nest, and flops off into the water. Female A in 1952 often quivered her wings when she left but I never saw the male do this or any other female from any of the other nests watched. She also had the habit of following her mate for a few feet as he swam away, before she returned to ascend for her spell. After being relieved the male and female studied at the very same site in 1949 (Pair A49), each used regularly to swim away from the nest in its own direction, one always to the left, the other always to the right. The A52 pair had no such routine. The relieved bird often preens, body-shakes, and flaps as it goes. Sometimes it very soon returns to add material, and so on, before leaving again.

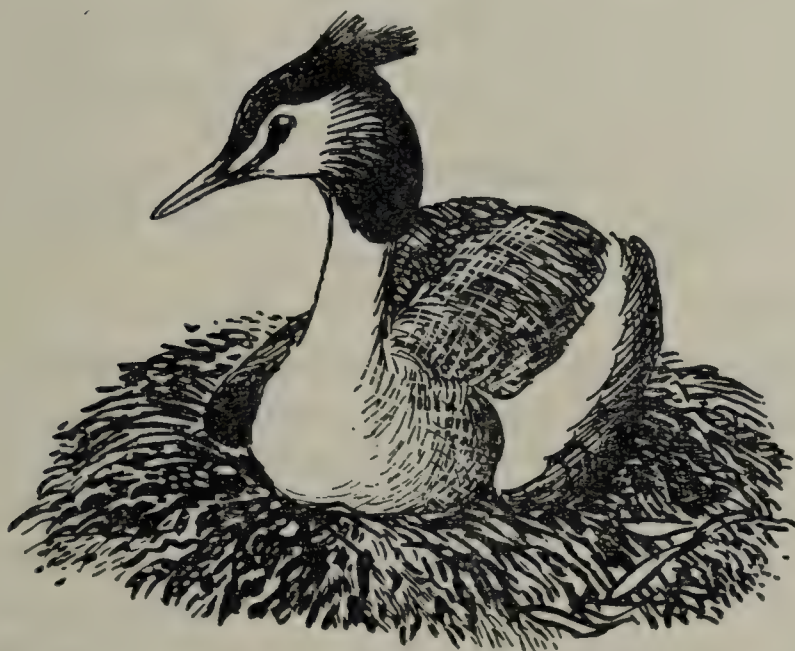
The relieving grebe almost immediately gets up on to the nest, usually in well less than a minute after this has been vacated. It often has its tippets depressed as it "makes up its mind" to jump aboard, which it finally does with a sudden leap. Some birds are better than others in ascending, female A52 being much more clumsy than her mate. Once up, the bird treads most carefully. Standing on the near rim, it arranges the nest material and gradually advances, with its feet well apart on the edge of the central depression out of harm's way, until directly over the eggs. It may poke its bill down among them. Finally, it heaves up its body, head resting back on shoulders, remains thus very full-chested for a very brief second and then, opening its brood-patch, settles down on the eggs. This whole procedure always fascinates me even though I must have witnessed it over a hundred times. The large brood-patch is exposed by the sudden parting of the thick white under-feathers, reminding me of a wound opening as the bare flesh comes to view. The grebe starts to shuffle its body from side to side as it lowers itself and this movement reaches its peak when the eggs are contacted. The bird settles breast first, hind end raised a little with the feathers fluffed, and the wings droop



slightly for a second, showing both white patches, before being flicked abruptly to a close. It does not kick backwards among the eggs with its feet (as do many groups of birds)—for very understandable reasons. From the first ascent to the final contact with the eggs half to one minute usually elapses.



Grebe lowering itself on to eggs.



Final phase of settling—just before the wings are flicked away.

#### *Length of the Brooding-spells and Share of the Sexes*

While the *Grebe Inquiry* implies that the male Great Crested Grebe takes the larger share in incubation, Hanzák states that it is the female which does a "distinctly greater" one. Neither authority gives any details however. *The Handbook* makes no contribution to the problem but gives the length of the brooding-spell as 3-3½ hours. In 1948 and



1949 I kept watch at several grebes' nests for a total of just over 40 hours. As I found that very few of the brooding-spells then recorded lasted for anything near as long as the *Handbook* says, I decided to make a more prolonged study of the whole problem later. This was done in 1952 when I spent 136 hours in all, spread over 17 days, observing at the nest of Pair A52 the two birds of which are figured on page 9. All the information given below is based on this last work. All together 54 completed brooding-spells were timed, 27 for each sex and 27 for each half of the incubation-period—a very nice even distribution.

Taking the records as a whole, first the individual spells ranged from just less than half an hour up to just over 4 hours, with an average of  $2\frac{1}{4}$  hours. There were more long spells in the second half of the incubation period than in the first. During the first 14 days only nine spells exceeded 2 hours, of which three just topped the 3-hour mark; during the second 14 days eighteen exceeded 2 hours, of which eight passed 3 hours and two 4 hours. The female did slightly more work than the male, her average "shift" lasting for  $2\frac{1}{2}$  hours as against his 2, and during the 136 hours of observation she was on the nest for a total of 53 per cent of the time and he for 47 per cent. Her shortest spell lasted just over 40 minutes and her longest 4 hours 6 minutes. Corresponding figures for the male were 20 minutes and 3 hours 40 minutes (the last on the day of hatching). There is no regularity at all in the grebes' time-table; either bird is liable to be found on the nest at any hour of the day and Hanzák's statement that the female sits more frequently in the morning was not substantiated by my records. So far as I could tell, the bird—male or female—that happens to be sitting at nightfall spends the night on the eggs.

#### *Covering over the Eggs*

It is well known that the Great Crested Grebe covers over its eggs with sodden weed so that they are completely hidden from view at times. However, there are many misconceptions about this habit and an attempt will now be made to clear some of these up. First of all the eggs are not covered over when the grebe leaves the nest for routine purposes but only after it has been *alarmed* by some enemy, in the majority of cases man. The *Grebe Inquiry* is by no means definite on this point. When disturbed the bird gets quickly up and, if it has time, covers the eggs over with very rapid right and left movements of the bill before flopping into the water. It may then dive right away, to lurk furtively about with neck awash, displacement-preening intermittently, or stay partly submerged in hiding near the nest—depending on the proximity of the predator. If, for some reason, the eggs have not been covered (for instance, the bird may have had virtually no warning but found the foe almost on it), one of the grebes



will sometimes come back, if it can, specially to cover them before leaving again. When danger is over the grebe returns and, first uncovering the eggs with the usual movements of nest arranging, settles down. Sometimes, if still rather alarmed, it will sit first and only afterwards rise and move the weed off the clutch. Occasionally, as has been noted by more than one observer, a grebe will go through the actions of uncovering the eggs even though these have not been previously hidden for some reason. Egg-concealing seems only to be done once true incubation has started: incomplete clutches are often left unhidden.

There has been more than one theory advanced to account for the biological usefulness of this behaviour. However, there can be little doubt that its primary function is to conceal the eggs—while the parent is away—from aerial predators such as the Carrion Crow (*Corvus corone*) that happen to be at hand when the disturbance occurs. "The main reason for covering up the clutch seems to be protection against an enemy from the air, crows, birds of prey of the genus *Circus*, etc., which may attack the clutch from above . . ." (Hanzák). Cott has shown that the grebe's eggs are highly palatable. Great Crested Grebes are very wary of Carrion Crows when nesting. On 27th May, 1954, Miss L. McCartan, Denis Owen and I were watching a pair of grebes nesting on an exposed, isolated gravel islet at Burghfield. When a crow happened to fly innocently low overhead, the incubating parent reacted by stretching up its head and spreading out its wings in a cat-display-like posture, the wing pattern showing up conspicuously. Later both grebes were in the water together when the crow passed over again. Immediately one of them skidded over the surface on its breast and jumped up on to the nest. It is interesting to note that the grebe does not leave the nest when a crow comes near and makes a strenuous effort to return and cover the eggs with its own body if no other danger is imminent. On 8th May, 1955, I saw a Carrion Crow raid a grebe's nest and carry away a fresh egg. This all adds up to the conclusion that the concealing of the eggs with weed is well worth doing if the birds are going to be away from the nest for any length of time and unable to defend it from aerial enemies. This happens, once full incubation has begun, only when the birds are frightened off. However, it is very strange that, during the laying period, the unstained white eggs may be left unhidden.

It is very doubtful whether the covering-over of the eggs with rotting, and presumably fermenting weed actually helps to incubate the eggs, as has so often been popularly supposed. Hanzák deals with this point excellently. He shows among other evidence that the nest itself is invariably cooler than the eggs, even when the bird is sitting. He sums up as follows: "Thus we must conclude that the temperature of the nest plays no role whatsoever in the development



of the clutch . . . the above conclusion is based on many measurements which I undertook for this purpose." He wisely adds, however, that "The fact that by covering the eggs these are protected against quick cooling cannot be denied . . . Schiermann (1927) arrived by measuring at this conclusion".

### *Rearing the Young*

#### *General*

The young Great Crested Grebe, a delightful little creature, is born with its eyes already open (iris, a muddy brown), with a good coat of thick down, and capable of co-ordinated movements. It is very distinctive in appearance, having its white head and neck, as well as the bill, boldly striped with black, the rest of the greyish body being similarly but more faintly lined and the underparts pure white.



Chick.

Between the forehead and each eye is a bare patch of red skin and another, strangely wrinkled on the crown. A white egg-tooth is present on the distal quarter of the upper mandible. The wings are rudimentary but the legs (slate-grey in colour with pink edges on the lobes of the toes) are quite strong. The chick can soon clamber about—on the nest and on the parent—and can even dive if necessary. It does not, however, feed itself and is dependent on its parents for at least the first six weeks or so of life, though it can, of course, both get some food for itself a little earlier than this and still receive some after. Some young remain with their parents for as long as 12 weeks, still getting food occasionally though perfectly able to catch their own. The *Grebe Inquiry's* statement that "The young begin to have some idea of diving when about six weeks old, but do not feed themselves until about nine weeks", needs considerable modification. I have known certain pairs to start second broods with first-brood young only six weeks old—and these have survived although subsequently only receiving very little food from their parents. Second broods are



not rare (as the *Grebe Inquiry* first showed), but can hardly be considered regular. At Burghfield only the birds occupying the large feeding-territory in the breeding-pool regularly attempt one (see p. 137), though all pairs usually replace lost clutches. Both parents feed the brood as a rule but if they have only a single young one, either may do so exclusively—sometimes the male, sometimes the female. With Pair A in 1952 the female took the chick away from the large territory for several days, leaving the male there alone. As already stated on page 136, some territories are entirely deserted when all the chicks have hatched, while others are only partly abandoned and some not at all. In the case of broods consisting of two young ones, both parents usually feed them indiscriminately but with larger broods each adult may sometimes become responsible for certain ones only. With these divided broods—of which more below—the two family groups may separate but seldom for long, usually a few hours at the most. After 6–7 weeks the adults often feed their brood less attentively though the young may remain with them for as long as 12 weeks in all, as already mentioned. The juveniles become gradually independent and often finally leave their parents peacefully though, sometimes, they are more or less driven away by the increasing aggressiveness of the adults.

Apart from the reactions directed at the parents, very little of the behaviour of young grebes will be mentioned here, mainly for reasons of space. At Burghfield independent young tend to form loose flocks in the late summer and some courtship has been seen in such stripe-head groups, generally low intensity Head-shaking Ceremonies. I have known young of six weeks to head-shake at each other when still dependent on the adults. The general striped pattern is characteristic of the full-grown juvenile as well as the chick, though the three red head-patches are eventually lost. Just when this happens I do not know; certainly not for many weeks after birth. Full-grown juveniles have no tippets but possess a very short, dark, horn-like crest-patch on each side of the crown.

For present purposes we may distinguish four main stages in the development of the young: (1) the critical period of hatching; (2) the guard-stage; (3) the later stage of dependence, and (4) independence. The general names "young" and "stripe-head" may be used for those grebes of any age that have not yet lost the striped plumage. "Chick" denotes a young one that is still being carried and guarded by its parents, and "juvenile" one that has passed this latter stage.

#### *Hatching and Brood-size*

Hatching is spread over several days, especially if incubation really did begin with the first egg laid, there then being two days between each



emergence. The question of hatching in the Great Crested Grebe is one which still requires much determined study. For instance, it is hard to understand the reason for the staggered hatching in a species with precocious young and an apparently steady food supply. Then, why is it that between the first hatching and final desertion of the nest a few days later so few young survive? The majority of broods consist of one or two young ones, and only a minority of three or more, and yet the normal clutch is of three to five eggs, usually four. Is the loss due to infertility, desertion of the unhatched eggs, mortality in the nest, or mortality as soon as the tiny chicks take to the water? These suggestions may each be considered in turn.

Infertile eggs do occur, but not in sufficiently large numbers to account for the regular small brood-size. Besides, Hanzák did not find a single clear egg in a whole colony of Black-necked Grebes (*Podiceps caspicus*) with 20–25 nests. Yet this species, too, has small broods like the larger species. Schiermann (1927) states that the grebes regularly hatch out only two young at most because one parent goes off with the first hatched chick and the other with the second, deserting the remaining unhatched eggs. This is obviously far too sweeping a generalization for a phenomenon which may sometimes occur—just how regularly we do not know. While it is certain that often only one or two chicks survive the period of hatching, broods of three are not uncommon, those of four occur occasionally, and even five rarely. For example, Rankin's pair hatched off three chicks on 14th, 16th, and 18th May, and still continued to incubate the fourth infertile egg for a while on the latter date. The species has a safeguard against the premature abandonment of the clutch, which though not 100 per cent effective, is better than nothing. This is the loud peeping of the chick from inside the egg which obviously keeps the parent attached to the nest for as long as possible. Rankin's birds even continued to brood the infertile egg four days after the hatching of the first chick. Pair A in 1952 went on sitting about five days after the first birth and then only led away a single surviving chick finally. This suggests that, in fact, some kind of mortality after hatching limits the final brood-size. I have occasionally found dead young in the nests of both Great Crested Grebe and Dabchick (*Podiceps ruficollis*) that have obviously been crushed by a heavy-footed parent. Even so, as with the other factors mentioned, this could not be a major cause of small broods—none of them account for the fact that on certain waters broods are regularly large (three or more young) and on others regularly small. Hanzák states: "But it is not rare that the grebes lead out the full number of fledglings (3–4). On ponds of Bystřice, near Benešov, this is an almost normal phenomenon. In Bohemia a small number of fledglings is a local phenomenon limited to certain populations only." This all goes to suggest that



predation on small young by large carnivorous Pike when they first take to the water is the main reason for the reduction in the number of young. It is the only explanation which takes into account the variation in brood-size from water to water. The carrying of the young when they are led away from the nest is a pattern aimed at reducing predation by Pike. The *Grebe Inquiry* reported that Pike were responsible for loss of chicks on 54 out of 74 lakes and were by far the greatest single factor. Other causes of death were due to weed-cutting (at 4 lakes), to Otters (*Lutra lutra*) (4), Foxes (*Vulpes vulpes*) (1), Herons (2), Trout (*Salmo* sp.) (2), Eels (*Anguilla anguilla*) (1), and to rain, etc. (4), and other causes (4).

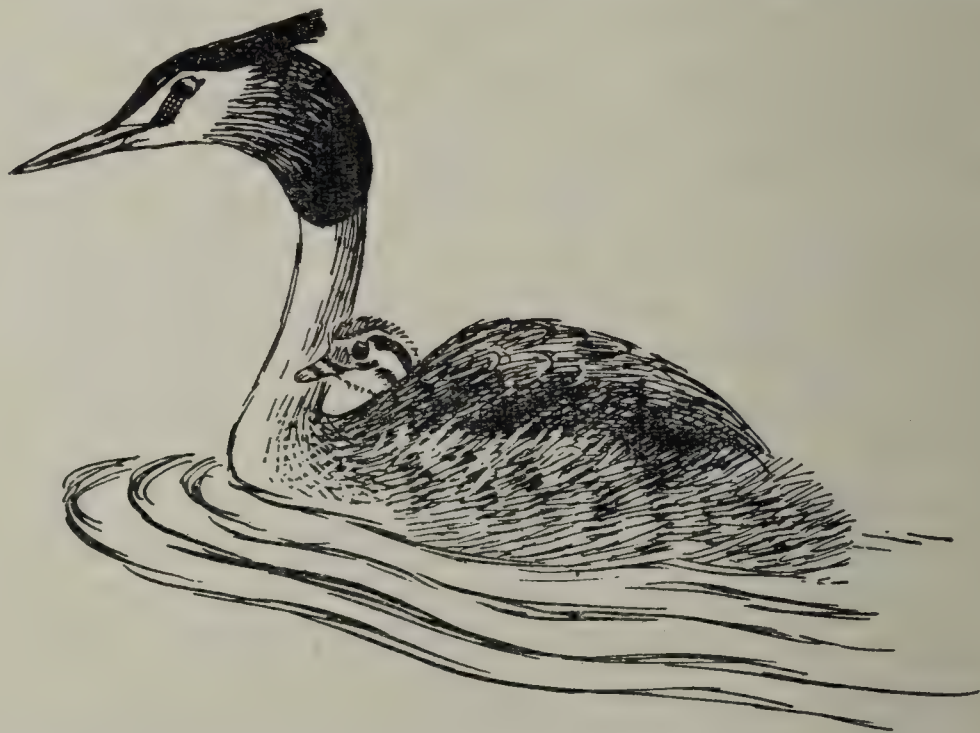
Soon after it has dried out, the chick clambers up on to the back of the sitting parent, into the space between the folded wings. For it to stay *under* the parent any longer than necessary would increase the chance of its being squashed. The sight of an adult grebe with one or more tiny striped heads protruding from the feathers of its back, especially those near the neck, is one to arouse the parental urges of the hardest of us! During the hatching period, while the parents are still attached to the nest, change-overs go on as usual. The hatched chicks usually remain with the incubating bird but are on occasions taken off by the non-sitting one, much depending on chance. If the brooding bird is disturbed, it may cover the small chick over with weed together with the remaining eggs. I once caught a newly hatched stripe-head. It got off the nest and, as I approached out of sight in the reeds, came towards me, giving a single, repeated squeak ("queep"), obviously mistaking me for one of its parents. When it did get a good view of me, it dived but I easily captured it as it submerged. In my hand it at first kept doing swimming movements with its legs, and called frequently. The adult grebe was obviously attracted by this squeaking—which is the same as that from the unhatched egg—and swam towards us as near as it dare. The chick pecked at and held objects put near its bill: my fingers, a small white stone, and a small grey one.

#### *The Guard-stage*

The nest is finally deserted when incubation ceases—apparently when the last fertile egg has hatched. For the first ten days or so, one parent carries the young on its back, usually remaining quietly at one spot often near cover or the bank, while the other forages for and brings food. This it normally gives directly to the young although the other adult may sometimes take and pass the item to one of them. The parents change over in these duties—as when incubating—and neither male nor female takes on one or other task exclusively, as the literature has implied. Once incubation has ceased the nest is not usually used as a resting-place or for other purposes. I have one record,



however, of a female grebe that got up on a disused platform and sat there for several minutes with some young on her back and one in the water. The chicks usually ascend the parent's back by their own efforts by clambering up from the rear. They will attempt this even when quite large and I once saw a 15-day-old one squatting ridiculously on the adult's back. During the guard-stage the chicks are not carried all the time but often get or fall into the water, especially when the other parent comes with food. Towards the end of the period the young spend less and less time on the back as they become too large both for Pike to take and for the adult to carry. Rankin records that the parent grebe will assist the chicks to ascend by placing its



Young on parent's back. Note typical mounded appearance of adult's feathers.

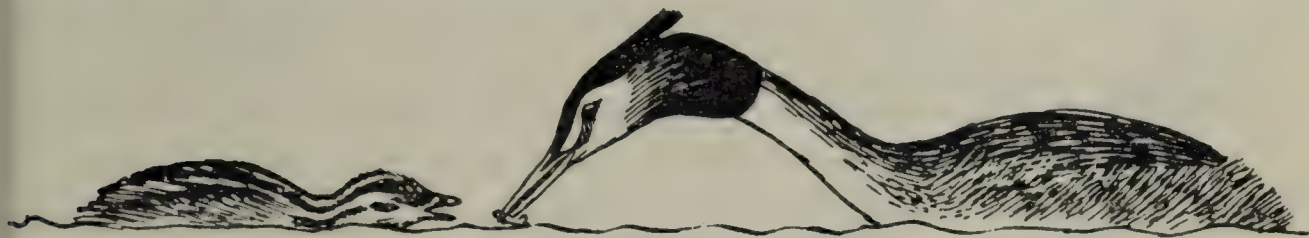
leg along the water and literally giving them "a leg up" on to the back. I have not yet seen this very interesting behaviour. The young are dislodged by the adult's rising up in the water and body-shaking (see p. 101); this may be the "special shuddering movement of the old birds" mentioned by Hanzák. The *Grebe Inquiry* states that "the adult gets tired of carrying the young and constantly jerks the chicks off the back into the water". If a parent does not wish a chick to mount up, it swims away quickly before the youngster can get impetus, sometimes rotating in the water also. Occasionally the adult dives with young still on its back—these stay put or, more usually, bob up to the surface like little corks. Hanzák also records that "once a flying grebe was shot down in a duck-hunt; it had a living fledgling on its back".

*Feeding the Young, the Later Stages of Dependence and Brood-division*

The food for the chicks consists mainly of small fish (which are larger as the chicks grow), and a lesser proportion of aquatic insects,



all of which are given alive. The adult carries only a single item of food at a time in the tip of the bill, and swims towards the young, sometimes diving *en route*. It holds a fish just behind the head and always presents its head first. While the parent may raise its head to feed a chick on the mate's back, it otherwise always holds the food right down so that it is taken at water-level. The chick has to take it, too, for food is never placed into its mouth never mind how young it is. At first the young do not usually follow the hunting bird but remain at one spot often, of course, with the other adult. Later, when they are larger and the guard-stage over, they do tend to accompany their



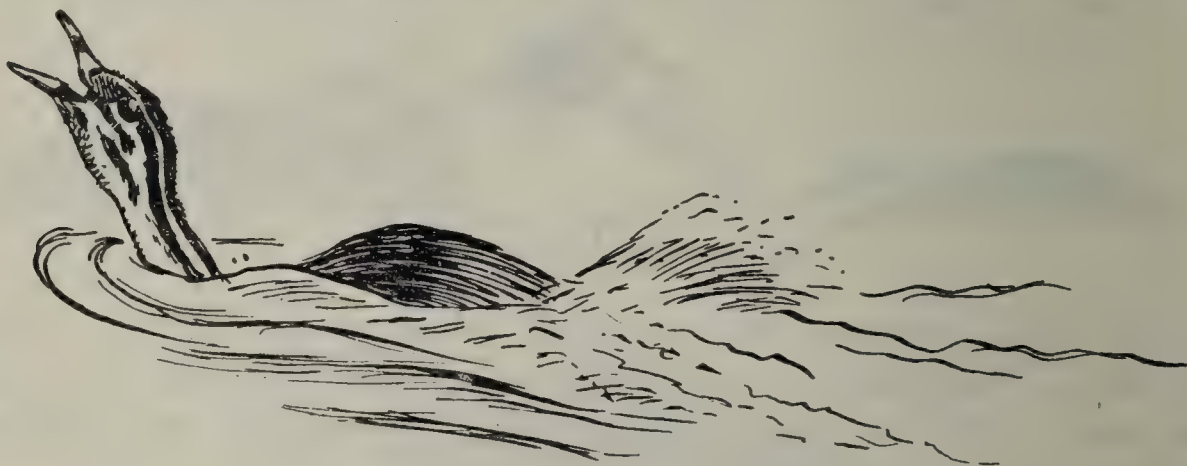
Parent giving fish to young.

parents more. Feathers are given from an early age—as early as the very day of hatching at times, as both Hanzák and Rankin note. The latter found that his first-hatched chick received only feathers for most of its first day of life.

By the time the stripe-heads are a fortnight old both parents are free to hunt food at the same time to satisfy the ever-increasing demands. The young have a persistent piping or peeping “food-call” which they utter frequently, especially on seeing an adult coming with food. This call seems almost certainly a louder version of the “queep” squeak already mentioned. The parent does not normally select a young one to feed but is quite content to part with its load to the first chick to reach it (providing, of course, in the case of divided-broods, the youngster is one of its own charges). Hanzák states that the young are fed on average about seven times an hour, but obviously much depends on the size of the young, number in the brood, and on whether one or both parents are foraging. I have not yet sorted out my own notes, but the following cases come to hand and may be given as examples. Thus, during the guard-stage Male A54 once fed his three young eighteen times in 107 minutes. Then came a relief and afterwards the female fed them twelve times in 75 minutes. Once Pair X52 were observed for two 20-minute periods on the same afternoon. The brood was divided, the male being in charge of two young and the female of one. In the first period, the male dived for food thirty-one times and was successful twelve times, each chick receiving six feeds; the female dived thirty times and was able to feed her young one seven morsels. In the second period the male's young received thirteen feeds between them from twenty-seven dives, and the female's eight feeds from eighteen dives.



When the juveniles are older, from a month onwards according to Hanzák, they may adopt a special posture when approaching a parent. At extremes the body is mainly submerged with the head and neck sticking sharply up out of the water, bill open showing the red interior, and legs kicking out laterally to make a very noticeable disturbance on the surface. In spite of the vigour of the leg actions, the stripe-head moves only slowly, as Hanzák also notes, all the while peeping vociferously. It may snatch food very quickly from the adult, turning away to make off at almost the same instance. Sometimes this splashing posture follows a definite aggressive movement from the



Appeasing behaviour of larger stripe-head.

parent and is often performed as the youngster swims away from it. This all gives the impression that the young one is very apprehensive of the adult. I believe that the posture—in which the red face-patches and mouth interior are presented frontally—is an appeasing one. The parents not infrequently show aggressive behaviour to their larger young and, though they never attack viciously, the value of the stripe-heads possessing an appeasing display is obvious. I have seen young grebes retreat before an aggressive Mute Swan (*Cygnus olor*) in the same way and once recorded, in unknown circumstances unfortunately, that an adult did so from its own mate.

As is well known, Great Crested Grebes, and also Dabchicks (Selous, 1905), may sometimes (definitely not always) divide larger broods, the male parent taking sole charge of some, the female of the others. This occurs once the guard-stage is over but exactly how we do not know. At times the arrangement is a peaceful one but at others one parent Great Crest may not only refuse to feed the other's young but actually drive them off should they approach for food. Since this extreme state of affairs was first recorded by Harrisson and Hollom, it has largely been overlooked, *The Handbook* not even mentioning it. Derek Goodwin and John Burton seem to have re-discovered it independently and I am very grateful to them for directing my attention to the problem in 1952, in which year I also first recorded a case. The young soon learn to appreciate the situation and become apprehen-



ve towards the parent that does not feed them, and eventually  
o not attempt to obtain food from it.

### *Reactions to Enemies*

Great Crested Grebes and their young usually dive away from enemies that threaten them from beyond a certain distance above water, as previously mentioned (pp. 85-6, 142-3). Pike are the major under-water danger to the young as outlined above and even the adults are wary of them. I have never definitely seen a grebe react to a Pike and am very indebted to Derek Goodwin for sending me the following record from Virginia Water Lake. "Adult grebe A was collecting food for two big young which were idling with adult B. Suddenly B seemed alert, stretching up its neck, apparently looking or trying to see something under the water ahead of it. Then it relaxed and drifted back to the young. A little later A brought a fish for the young. As it swam away to seek more, it passed through the area at which B had been looking. Suddenly with loud cries—I think rather like the threat notes but very loud, startling and anguished—it jumped vertically out of the water, about 3 feet into the air, or so it appeared. It fell, or half fell, half flew back and as it hit the water it violently sped away, thrashing over the surface like a young duck when chased. At the same moment as this began, the other three reacted by fleeing in a similar manner, but with no initial jump, away in a different direction. A eventually swam round in a wide circle to join them. The thing that most amazed me was that a grebe should jump or fly up as it did. I should have thought this quite impossible." He adds that both he and his companion "watched carefully and saw no sign of another grebe or an Otter, so conclude that it must have been a Pike that was responsible".

It is interesting to note also that when escaping from the Pike the birds did not dive and made a great disturbance on the surface. During escape-bathing (see pp. 101-2) much the same occurs so perhaps the fish are put off when the water is splashed up. The Dabchick calls when danger threatens and dives quickly raising a noisy and noticeable spurt of water—thus alerting the young. I have only seen this done as a reaction to humans but perhaps it is also employed against Pike.

Other waterbirds do not usually directly harm young grebes though Herons take a very few (not at Burghfield). Mute Swans, especially individual rogue ones, can be a nuisance. J. L. Fox tells me that at Bearwood (Berkshire), in this year, 1955, the parents of one grebe brood always "were most careful to take their two young to cover under bushes overhanging the water when the swan was within 75 yards". This is most interesting for usually the grebes take refuge in open water when danger threatens. It seems very likely that the



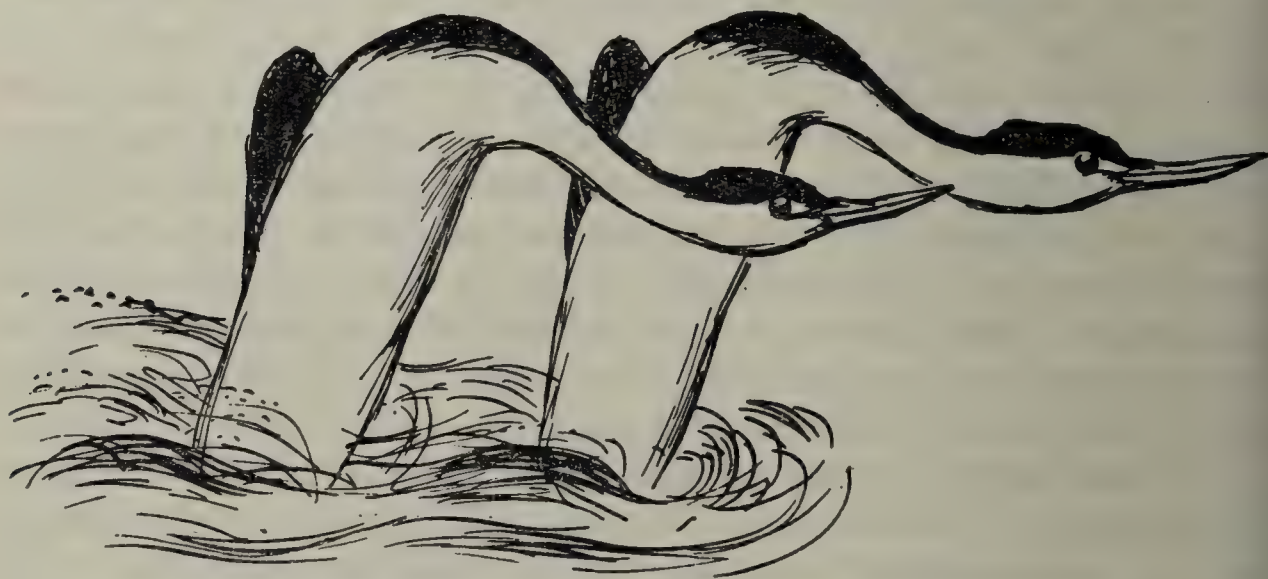
Bearwood birds learnt that the swan was more of a menace to them in the open.

\* \* \*

#### ADDITIONAL NOTES

Page 4 : *Display of the Dabchick*.—Lorenz's notes on the courtship of the Dabchick seem little known and are therefore quoted in full from the 1937 English digest of his original German paper. "... I would cite the differentiation of the head plumage in grebes. In the smallest of the European species, the Dabchick, a certain ceremony can be observed in which a most singular shape of the head and neck is brought about by depressing the feathers of the neck up to a sharply defined line just below the lower mandible, upward from which the plumage of the head is erected. The sharp boundary between the fluffed and depressed parts of the plumage in the Dabchick is purely functional, no difference in feather length or color being visible in the quiescent or dead bird. Yet this line, in most other grebes, forms the boundary between the short, plush-like plumage of the neck and the area covered with elongated and brightly colored feathers on the bird's head." This survey provides us with a good basis for a study of the evolution of display structures in grebes.

Page 5 : *Display of the Western Grebe*.—Since commenting briefly on the courtship of this species, I have seen further cine shots of it in the Disney film *The Vanishing Prairie*. In the mutual dash over the surface, each bird has the neck arched forward with the head pointing up, and the folded wings held



Mutual courtship "dash" of Western Grebe.

back—as shown in the sketch by Gillmor who made it soon after seeing the film. The two grebes terminate their dash with a sudden dive below the water. The species has, also, a mutual Habit-preening Ceremony in which male and female dip their heads *repeatedly* backwards to preen the back somewhere in the region of the scapulars. They do this side-by-side, and not when facing as in the Great Crested Grebe.

Page 94 : *Underwater Speed*.—The *Grebe Inquiry* cites J. Vincent to the effect that a Great Crested Grebe on a long straight dive could outpace him while he was punting at 5 miles an hour.

Pages 94-5 : *Flight*.—The *Grebe Inquiry* gives one record of a timed flight speed of 37 m.p.h. and quotes Vincent's opinion that the grebe can fly as fast as the diving-ducks with a speed of 45-50 m.p.h. Two records are also given of wing-beat rates, which worked out at 290 and 240 beats a minute, lower than Meinertzhagen's 360-400 but still very fast.



Pages 97-8 : *Eating a Fish*.—When it is swallowing a large fish, a grebe may sometimes push back with its feet during the head-jerking movements to give itself more power in its difficult task. Also, besides washing the bill afterwards, the bird often drinks as well, as noted by Hanzák.

Page 134 : *The Flirtation of a Mated Female*.—Soon after my statement that I had never seen a mated female "flirt" had been published, I found the following record in my notebook for 1951 ! On 28th January (the day after the events reported for Pair A, on pp. 192-4) the newly formed Pair B swam towards its more dominant neighbours, Pair A, in forward-display threat. ♂A became very aggressive and ♂B retreated by diving. ♀B and ♂A then linked up and H.S., both afterwards threatening ♂B together. ♀B afterwards dived towards her mate, who went into the cat-display and a regular Discovery-ceremony resulted followed by H.S. The interesting points here are that (1) the B couple were only newly paired-up—which perhaps make the rare event of a mated female flirtation more understandable ; (2) a Discovery-ceremony occurred after the "unfaithfulness" and aggression of ♀B towards her own mate—this supports my theories on the causation of this form of courtship (see pp. 199-200).

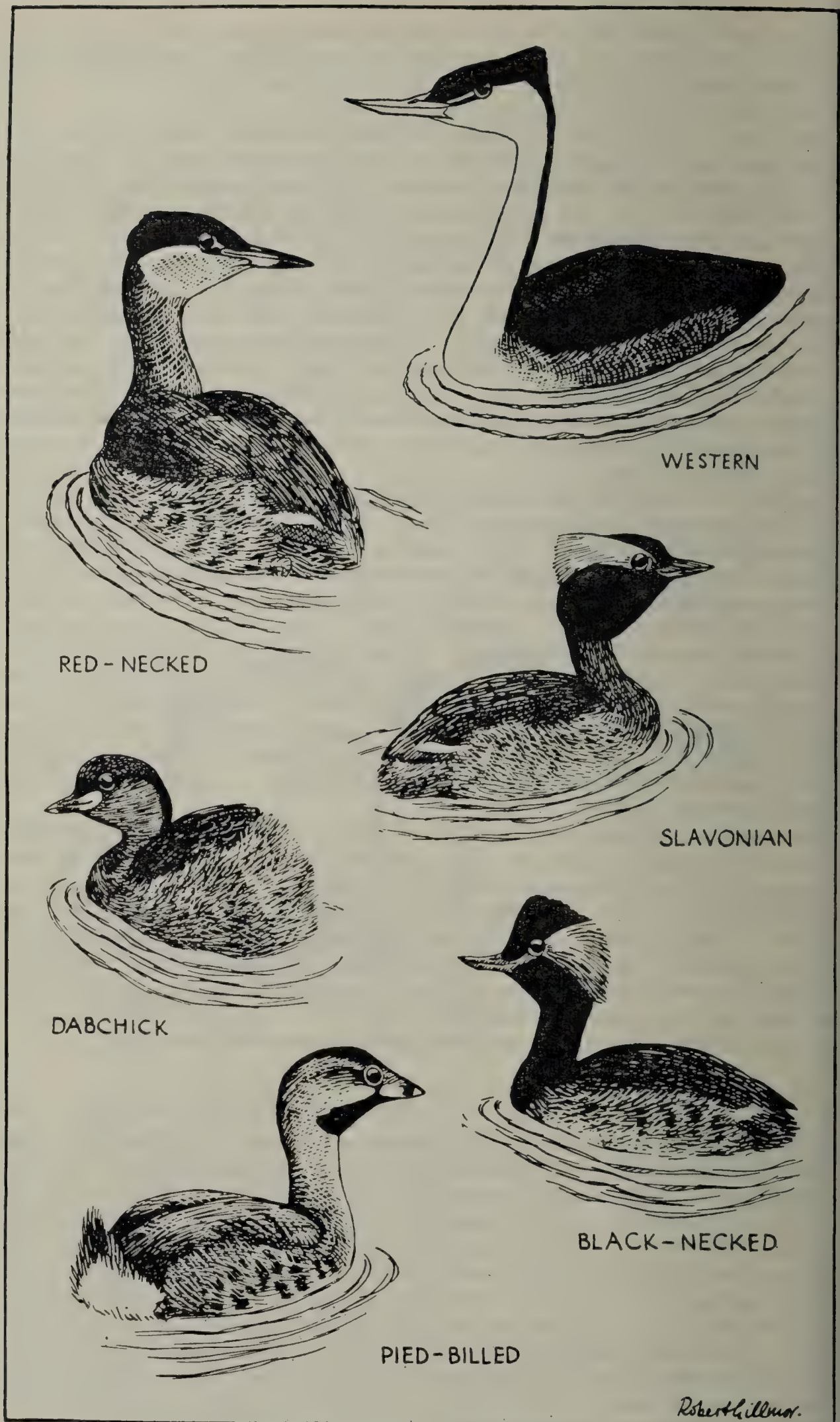
Page 145 : *Territorial Relationship with the Dabchick*.—The *Grebe Inquiry* emphatically states that "certainly there is no direct hostility or aggression" between Great Crested and Little Grebes. This is incorrect. Dabchicks sometimes turn up at Burghfield in the spring and those that are found in the territories of the larger species in the breeding-pool have little peace. They are harried much as furtive, intruding Great Crests. It is a rather pathetic sight to see the smaller bird being held by the neck and forced under the water, as occasionally happens. Tucker (1934) remarks that "it is observable that Dabchicks are very often absent or scarce on waters where the larger species nests. It is true that the Dabchick is in general more of a shallow-water feeder, but as the Great Crested Grebe will also sometimes breed on quite shallow waters other factors must be involved as well". These last probably include territorial rivalry.

Pages 246-7 : *Behaviour of the "Active" Bird*.—Hartley (1937) reports that when the "active" Dabchick is not inclined to mount the soliciting one, "it may climb on to the nest beside the inviting bird and itself assume the crouching pose". On a normal weed platform there is no room for the "active" Great Crested Grebe to do the same as this. Neither, however, does it regularly "invite" in the water when its mate is on the platform. The pair that went through the platform stages on the sand-spit, were very interesting in this respect. The two birds were once seen performing the invitation-display side-by-side on their enormous artificial platform.

#### CONCLUSION : THE BEHAVIOUR OF OTHER SPECIES OF GREBE

This paper has been concerned with the behaviour of the Great Crested Grebe (*Podiceps cristatus*) and no attempt made to compare this fully with that of other grebe species, some seventeen in all according to Peter's *Check-list of the Birds of the World*. In fact, however, very little seems to be known about the behaviour of the majority of these and any competent observer that undertakes to study one will be certain of a fascinating task. He will not have had the advantage, though, of a Huxley preparing the ground beforehand as I have had. What is needed initially in a comparative study of grebe behaviour is a really detailed objective inventory of the threat and courtship displays of as many species as possible in order to trace the evolution of such behaviour in the group as a whole. What a wonderfully exciting field of research is crying out to be explored !





Impressions of some other grebe species mentioned.



Of the other seventeen species, most is known about the Dabchick or Little Grebe (*Podiceps ruficollis*), but comparatively nothing about other members of the same sub-genus (*Poliocephalus*), including the common Least Grebe (*Podiceps dominicus*) of the Americas. The strange, primitive Pied-billed Grebe (*Podilymbus podiceps*) that force-copulates in the water is certainly well worth serious study. Does it show normal platform-behaviour as well? And what of the Giant Pied-billed Grebe (*Podilymbus gigas*) of Lake Atitlán in Guatemala? Then, I know of no ambitious work on another rather mysterious species, the Western or Swan Grebe (*Æchmophorus occidentalis*) of North America, while the literature on its large relative, the Great Grebe (*Æ. major*) of South America, seems non-existent. Similarly, nothing at all is known of the behaviour of other South American species such as the Short-winged Grebe (*Centropelma micropteron*) of Lake Titicaca, and the beautiful Taczanowski's Grebe (*Podiceps taczanowskii*) of Peru. In truth, the American literature on grebe behaviour is terribly disappointing. Of the species that the New and Old Worlds share, most is known of the Black-necked Grebe (*Podiceps caspicus*), though even here we really only have a series of fragmentary notes. Little is available on the Red-necked and Slavonian Grebes (*Podiceps griseigena* and *auritus*). This last species abounds on Lake Mývatn in Iceland where it should be easy to study. What is known about all these birds is summarized in volume 4 of *The Handbook*.

#### SUMMARY OF CONTENTS

The following summary lists in chronological order the main subjects covered in this paper on the behaviour of the Great Crested Grebe (*Podiceps cristatus*).

1. *Introductory and some General Aspects* (pp. 3–13).—General introduction to the study; species' appearance; relationship of grebes (Podicipitiformes) and divers (Gaviiformes); the study water and its bird life; previous studies on the grebe and the more important literature in English language; adaptation and relation of the grebe to its aquatic surroundings; the almost equal role that male and female play in nearly every sphere of the species' life; the frequency and elaborateness of the courtship; whether grebes breed in their first full year of life; the history of the decline and rise in the Great Crested Grebe population of the U.K., with mention of the Pike (*Esox lucius*) as an important brood predator; habitat requirements; summary of the annual-cycle as observed at Burghfield gravel-pit, Berkshire.

2. *Routine and General Habits* (pp. 93–102).—General summary of feeding and resting routine together with behaviour of those individuals which winter at the local water; surface-swimming; wing-beats and appearance in flight; landing on the surface; progress on land; diving, length of time spent under water, feeding habits and diet, underwater vision; drinking; feather-eating; resting, preening, oiling, scratching, stretching, and bathing (including escape behaviour connected with latter); general notes on voice.

3. *Threat and Fighting and their Relation to Sexual Rivalry, Territory, the Defence of the Young, and Courtship* (pp. 131–146).—Relation of threat, etc., to the annual-cycle; defence of the mate; flirtation; defence of the nest site and territory; defence of the young; size of territory and various forms of reproductive behaviour performed there; general notes on the nature of threat, etc.; the forward-display; token-diving; one-sided attack; origin of the forward-display; actual fighting between two grebes; the various escape patterns, including the furtive-posture, diving and escape over the surface, escape-bathing; the cat-display as performed by threatened, unpaired females; the relation between aggressive-behaviour and courtship.



4. *The Significance of Courtship and Related Behaviour* (pp. 181–201).—Description of the actual displays (head-shaking, habit-preening, weed-trick, penguin-dance, ghostly-penguin and cat-display) ; appearance and circumstances of performance of the courtship-ceremonies (mutual Head-shaking and Penguin-dance Ceremonies, reciprocal Discovery- and Display-Ceremonies) ; extract from field-notes ; the special advertising-display of the female ; pair-formation ; relation of courtship to the reproductive-cycle ; origins of the courtship ; its causation ; its function.

5. *Platform-behaviour* (pp. 235–253).—The normal platform cycle ; behaviour of birds unable to get a suitable site ; situation and selection of the site ; building ; the soliciting-displays (“inviting” and “rearing”) ; behaviour before, after, and during copulation ; the evidence for reversed mounting ; derivation of the soliciting-displays ; the “bi-sexual” nature of the grebe’s sexual behaviour ; function of soliciting ; success and length of coition ; discussion on reversed mounting ; post-copulatory behaviour ; relationship between nest-building and sexual behaviour.

6. *Notes on Some Aspects of Parental-behaviour* (pp. 295–310).—Egg-laying, appearance of eggs, clutch and egg size ; start of incubation ; length of incubation ; routine on the nest, including turning of the eggs and recovery of displaced ones ; absence of “connubial-feeding” ; visits of the non-sitting bird and behaviour away from the nest ; nest-relief ; settling down on the eggs ; length of the brooding-spells and the relative share of the sexes ; concealing of the eggs after alarm and the function of this behaviour ; reaction to Carrion Crows (*Corvus corone*) ; other theories to explain egg-covering ; the appearance and capabilities of the chick ; general summary of the dependence stages ; brief notes on independent juveniles ; hatching, survey of factors limiting size of grebe broods, losses due to Pike and other causes ; the guard-stage, carrying the young, food and feeding ; appeasing behaviour of the young ; division of larger broods ; reaction to Pike and other enemies.

N.B.—Throughout this paper **unqualified** use of “grebe”, “grebes”, etc., signifies the Great Crested Grebe only and not grebe species in general.

#### ACKNOWLEDGMENTS

This paper has been specially prepared for publication in the 1955 volume of the AVICULTURAL MAGAZINE, and I am greatly indebted to the Editor, Miss P. Barclay-Smith, for giving me the opportunity to write it. Also, I much appreciate her encouragement and patience—delays on my part have at times been the main reason, I know, for the late publication of the journal. Very special thanks must be given to Robert Gillmor for the fine drawings which so enliven the paper. These have required long periods of work, often when there were other important demands on his time. Acknowledgments are also gratefully made to the following : John Burton, W. N. Charles, C. E. Douglas, John Field, James Fisher, J. L. Fox, Derek Goodwin, Miss L. McCartan, and Dr. David Snow (for information on individual points) ; and to my fellow teachers, Mrs. A. Eyres, G. D. Lewis, Mrs. D. Walker, and E. S. Wilkinson, with whom I have been able to discuss some matters of presentation and wording.

Apart from the help mentioned above, specifically to do with the



present paper, I have also had the benefit of many profitable and enjoyable hours spent in talking over grebes with C. E. Douglas, who has been watching the Burghfield ones for as long as I have, and in discussing animal behaviour with Derek Goodwin. I must also thank James Fisher and Dr. Julian Huxley for their interest and encouragement.

## CORRECTIONS

From pp. 4-9. For "tippits" (etc.), read "tippets".

p. 6. Only Hollom's sample census of 1935, and not the main *Inquiry* of 1931, was the co-operative work of the B.T.O.

p. 7. I must apologize to Miss L. McCartan for mis-spelling her name.

p. 195, lines 10-11. For "Yellowed-eyed Penguin (*Magadyptes antipodes*)" read "Yellow-eyed Penguin (*Magadyptes antipodes*)".

p. 201, line 5. For "other grebe", read "another grebe".

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## 21ST ANNIVERSARY CELEBRATIONS OF THE NORTH OF ENGLAND ZOOLOGICAL SOCIETY

On 13th June, 1934, the North of England Zoological Society was founded and took over the Chester Zoo, which had been established in 1930 by Mr. George S. Mottershead. This important event was celebrated by a Garden Party on 13th June, 1955, which was attended by several hundred people representative both of the county and city and from far afield. A further celebration was held on 18th October, 1955, when a dinner was given by the Council of the Society in the Grosvenor Hotel, Chester. The Chairman of the Society was in the Chair, and the dinner was attended by the Lord-Lieutenant of



Cheshire, Viscount Leverhulme, and Viscountess Leverhulme, the Mayor and Mayoress and Sheriff of Chester, the Chairman of the Cheshire County Council, the Clerk to the County Council, the Town Clerk of Chester, and many other local dignitaries. Also present were Dr. Edward Hindle, F.R.S., Founder and first President of the Glasgow Zoo, Mr. E. H. Tong, Superintendent of Whipsnade Zoo, Mr. G. T. Iles, Superintendent of Belle Vue Zoo, Manchester, and Mr. D. H. S. Risdon, Superintendent of Dudley Zoo. The Avicultural Society was represented by Miss Phyllis Barclay-Smith, Editor of the AVICULTURAL MAGAZINE.

After the loyal toast, the Chairman proposed the toast of the visitors, and this was replied to by Viscount Leverhulme, who paid high tribute to the great progress made by the North of England Zoological Society and to the excellence of the Chester Zoo. He pointed out the unique character of the Zoo, and emphasized its particular beauty in the wealth of flowers which was always to be found in the gardens. In tracing the history and growth of the Society Lord Leverhulme mentioned that in 1935 the total receipts for the year had been £1,120, and there was a deficit of £213, whereas in 1954 there had been a profit of £10,000. The rules of the Society stipulated that all surplus money should be used for the further development of the Zoological Gardens, and therefore very rapid strides had been possible. He referred enthusiastically to the great achievements of the Society's Director-Secretary, Mr. G. S. Mottershead, whose far-sightedness, initiative, and ingenuity had carried the Zoological Gardens through critical periods and to whom so much of its present outstanding success was due.

The toast of the North of England Zoological Society was then proposed by Colonel F. Saxon, O.B.E., who also emphasized the great progress that had been made. Mr. A. F. Holden replied on behalf of the Society, and mentioned some of the difficult situations they had had to face, including the shortage of funds, but in spite of which they had won through; he also, referred to the great part played by Mr. Mottershead.

Miss Geraldine Russell Allen, who mentioned that she had been a member of the Council for twenty-one years, in a charming speech paid special tribute to Mr. G. S. Mottershead. She told of his resourcefulness, his hard work, and his unceasing determination never to accept defeat—this characteristic of his had been of inestimable value to the Society, and to this was owed the position the Zoo held to-day. She understood the Mottersheads were a long-lived family, and she hoped Mr. George Mottershead would be true to type in this respect. She then presented to Mr. Mottershead, from the members of the Society, an inscribed silver salver and ten Chinese carved ivory figures representing ten trades, of which, as Miss Russell Allen aptly remarked,



Mr. Mottershead was master of all. The presentation was followed by prolonged applause.

In his reply of thanks Mr. Mottershead said that ever since he was a small boy it had always been his ambition to have a Zoo.

All members of the Avicultural Society will wish to join in good wishes for the future of the Chester Zoo, and in congratulating Mr. G. S. Mottershead on his great achievement.

P. B-S.

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## OBITUARY

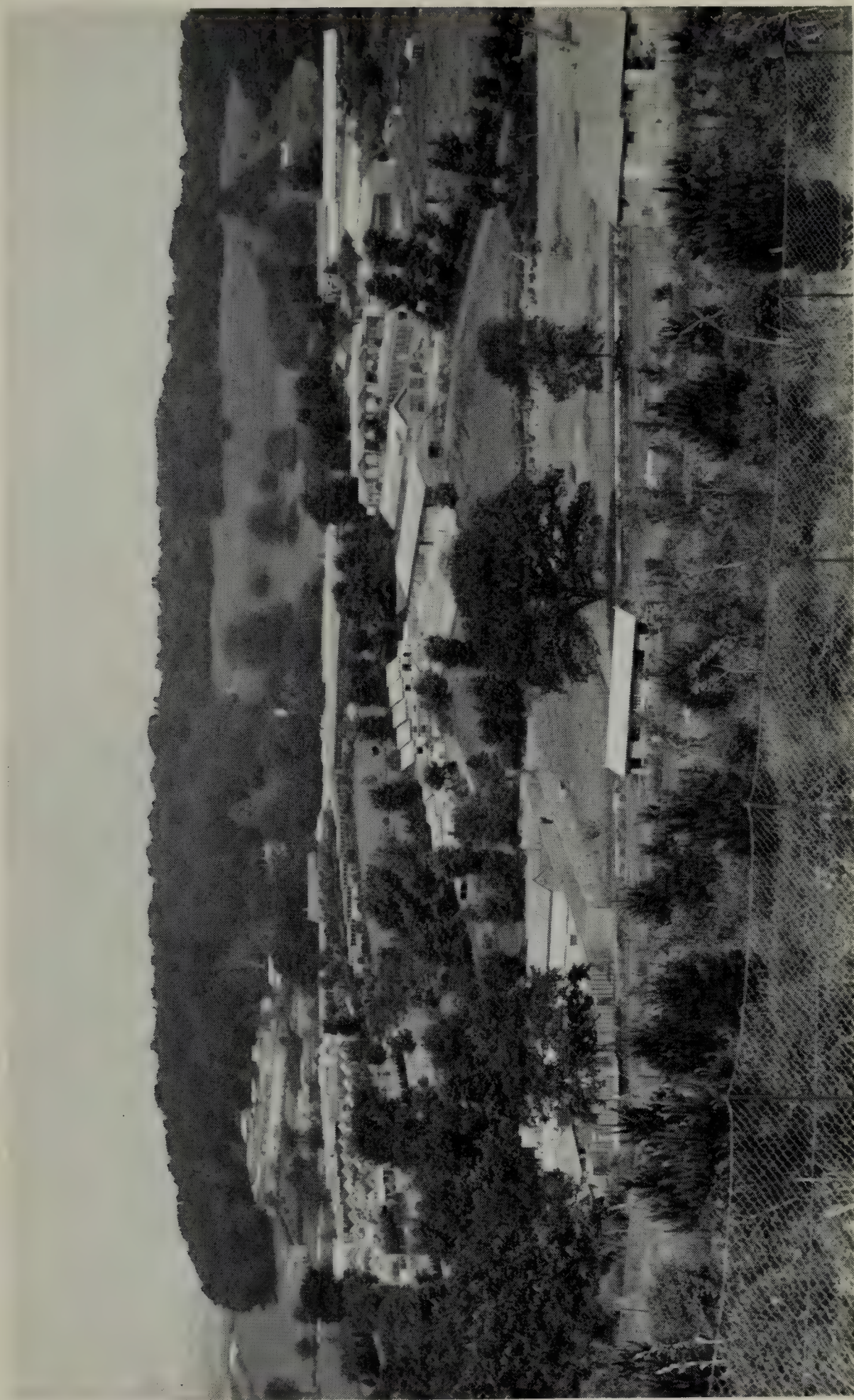
### HERBERT WHITLEY

Following the death of our President, Mr. Ezra, and our member, Major Pam, our Society has suffered yet another grievous loss by the death of Mr. Herbert Whitley, of Primley Hill, Paignton, on 15th September. He died at the comparatively early age of 69 after many months of illness and suffering.

He came of a Liverpool family which migrated to Devonshire and was the youngest of three brothers and unmarried. He was a very remarkable personality, entirely devoted to the world of natural history, and fortunate to be able to follow his hobbies with very large, and indeed unrivalled installations and collections of plants, birds, animals of every description, tropical fish and reptiles, domestic pigeons by the thousand, and a great variety of poultry. He became a member of our Society in 1923, by which time many acres of his property on the other side of the road from Primley Hill were rapidly developing into a beautiful garden setting to house a zoological collection of the first importance. Those of us who were privileged to visit him were amazed each time we went to find more and more accommodation being built, with bricklayers and carpenters at work on new houses till darkness fell each day. At that time some of us were thinking in terms of tropical greenhouses with birds flying loose in them—Mr. Whitley's response was a vast house some 240 feet long, with a tropical water lily house at one end and a central passage with eight large greenhouses on one side and a number of smaller compartments on the other, all magnificently planted and garnished with huge specimen plants and tenanted by some of the choicest birds in glorious condition—incidentally, this house, embracing also beneath its span a tropical aquarium and reptile house, was planned on half a sheet of note-paper: every detail of construction was thought out by the owner and his workmen on the spot without the help of an architect.

It was followed by a new parrot house and other very numerous indoor aviaries, until it was claimed that the visitor could walk half a mile through bird houses without going out of doors.



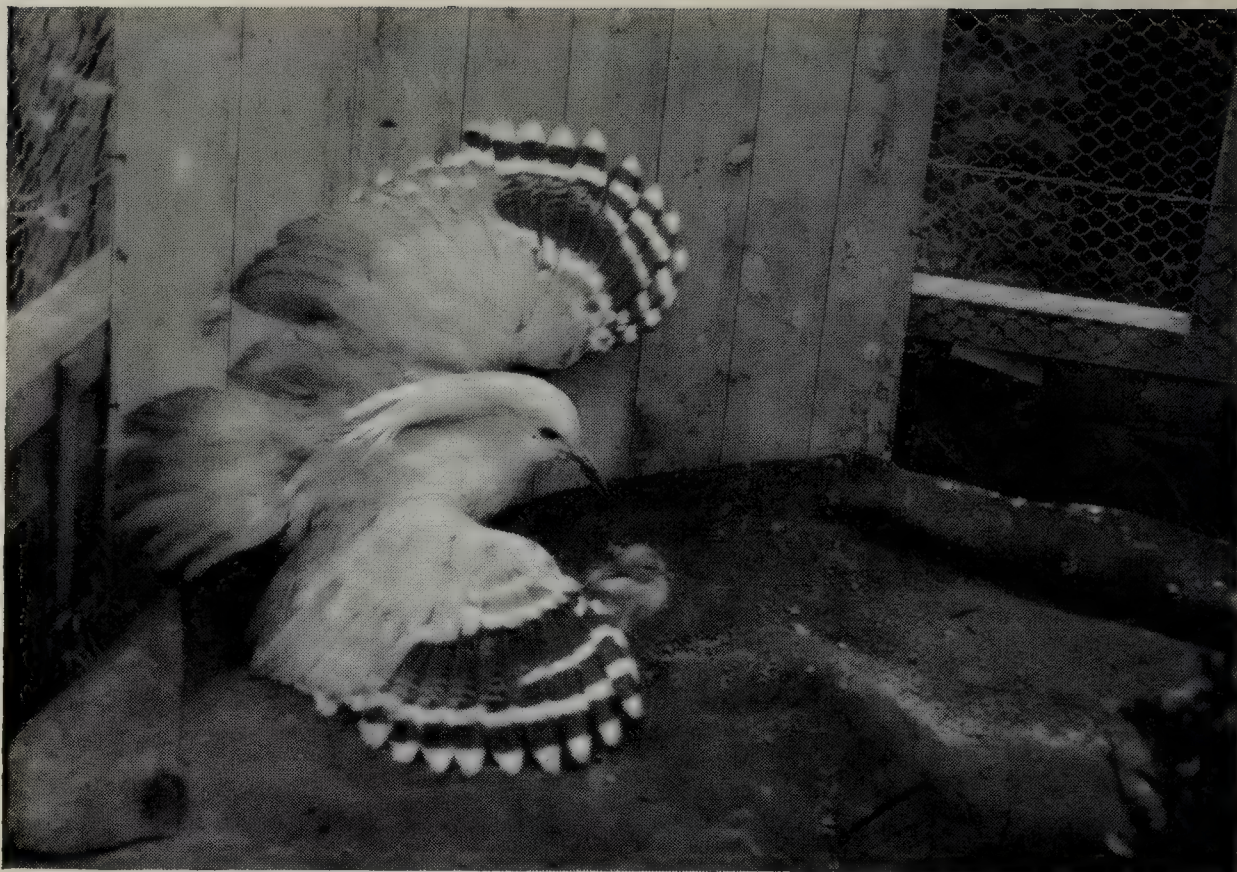


Copyright]  
To face p. 318.

GENERAL VIEW OF PRIMLEY ZOO.

[Cage-Birds





KAGU AND CHICK.

Copyright]

[Primley Zoo



CRESTED SCREAMER AND YOUNG ON LAKE.

Copyright]

To face p. 319.

[Primley Zoo



In 1927 the garden was opened to visitors on payment of a small admission charge and remained so till 1937, during which time many hundreds of summer and winter visitors to Torquay, and very many of our own members too, came to regard it as the Mecca of naturalists.

There were frequent articles in our Magazine praising the beauty of it and enumerating the many species and their breeding. Dr. Hopkinson in 1931 wrote a series of four articles describing a tour of the garden which took him a week to see in detail. These, and other notes by Mr. Seth-Smith in 1925 and by Mr. Delacour in 1930 are well worth reading again. It was a sad blow to aviculturists and naturalists when in 1937 a disagreement arose between the owner and the Inland Revenue authorities, who insisted on the payment of an entertainment tax out of the small admission charge made, and took Mr. Whitley to court. It was in vain that he argued that his private collection was not an entertainment because nothing was specially staged for the benefit of the public. I was instrumental in getting the Council of our Society to take up the matter with the Revenue authorities in the interest of our members, but without avail, and Mr. Whitley closed the garden to visitors. The collection, however, continued to grow; almost every day something new arrived from the dealers, and fresh accommodation was continually being provided until the fateful year of 1939. With the outbreak of war, the fearful increase in taxation, and the insoluble difficulties of finding food and labour to nourish and care for such a host of creatures, Mr. Whitley dispensed with a very large part of his collection and handed over the garden on lease to a company.

One's impression of all the installations was the overriding concern for the comfort and condition of the livestock rather than its attractive presentation, although this was at its highest in the great tropical house. No detail was too small to overlook: the placing of perches, the covering of the floors, the feeding, the provision of privacy, and in the case of temperamental birds the addition of inner flight cages, in which the male of a pair, or sometimes the female, could be shut apart to avoid jealous quarrels.

Heat was provided in very many of the houses and the inmates of these were heavily syringed in the morning. The resulting condition of the birds was wonderful: experienced parrot keepers frequently told me they had never seen parrots in such perfect condition. In consequence of all this many rare birds bred, some successfully, others not. A list of successes supplied to me include the Roulroul (a medal awarded), Red-collared Lorrikeet, Green Glossy Starling, Crested Screamer, Lilac-throated Roller, Black-headed, Red-bellied, and Half-moon Conures, Sarus Crane, Eagle Owl, Black-throated Saltator, Kuhl's Ground Thrush, Vinaceous Waxbill, Blue-headed Parrot Finch, Arabian Partridge, Rose-breasted and Blue Grosbeaks. In



the less successful category were the Red Bird of Paradise (hatched), the Blue, Rothschild's and the Superb Birds of Paradise, which all laid, Lort's and the Long-tailed Roller, Fairy Blue Birds (young lived eight days), Rufous-bellied Niltava, White-crested Jay-Thrush, Senegal Touraco, Victoria Crowned Pigeon, Grey-naped Ground Pigeon (*Otidiphaps*), Kagu, Grey Struthidea, Red-wattled Guan, Red-billed Curassow, Giant Condor, Raven, Sun Bittern, and Stanley Crane.

Mr. Whitley was very fond of producing hybrids ("you never know what it may lead to"). There was a range of small flights known as "China Town", containing three "streets", in which almost every possible cross of Lovebirds was made.

He produced a hybrid Eclectus Parrot from the Grand crossed with the Red-sided, a nestful of hybrid Amazon Parrots from the Green-cheeked and the Spectacled, hybrid Pionus Parrots from the Yellow-billed and the Blue-headed. He crossed the Royal Starling with the Superb Spreo and Heck's Grassfinch with the Spice Bird. His name is perpetuated in the Whitley's Conure, a large species of which only one specimen ever arrived and was new to the British Museum of Natural History.

Successes on the show bench were also very numerous: the first time I ever saw Mr. Whitley (and the only time I ever saw him wearing a collar and tie) was at a Crystal Palace show with a superb team of winners. He had travelled overnight in the guard's van with them.

It would be ungracious to conclude this article without mentioning the name of the lady in charge of all the birds, Miss Gladys Salter, for over thirty years the faithful friend and retainer. She was in control of a staff of up to a score of assistants and working all hours of the day and night.

Time was of no account at Primley: night was turned into day. Mr. Whitley ate one meal a day and seldom went to bed before five o'clock in the morning, and in his last years not at all. The nights were spent perhaps potting plants in the greenhouse, or feeding giant toads, or looking up books of reference, or playing snooker with the staff (this became the custom twice weekly, ending with cups of cocoa at 5 a.m.).

His vast knowledge, gathered from personal observation, was not alas committed to paper for the benefit of us who follow him: he scorned the reading or writing of chatty books or articles which he always said were likely to hand on inaccurate statements to posterity. He was not readily accessible except to true fanciers and enthusiasts, but to these he would give unlimited time and be extremely generous. He loved arguing with everybody and frequently confounded the scientists. Withal he had a great sense of fun and of the ridiculous,



and was to those of us who came to know him well an attractive and indeed a well loved personality.

Hail and farewell to a great man.

H. S. STOKES.

\* \* \*

My association with Herbert Whitley began when I visited Primley in 1949, during an interval between my zoological collecting trips to the tropics. Thus I did not know him when the Primley avicultural collection was at its best.

In the autumn of 1952 I came to Paignton Zoo to tend the reviving post-war collection, and for three years I have been privileged to have frequent access to Mr. Whitley in connection with the management of the Zoo. Discussion often developed far beyond the immediate matters of Zoo business, and I was able to benefit from his wide knowledge and experience in various fields of zoology and natural history. He gave very readily the fruits of his mind to those he considered genuinely or seriously interested.

Conversation with "H. W.", as he was affectionately known to some of us, often went far into the night, even into the small hours. A zoological problem, more often than not, demanded research, when reference would be made to the many fine books in his library for checking and cross-checking. Whitley had a remarkable memory, but he always wanted accuracy and so he usually preferred to verify the facts from his books. He was a unique and wonderful tutor on these occasions; his knowledge on many subjects was, in my view, unrivalled and based on profound wisdom.

Whitley's understanding of birds, both as an aviculturist and as a fancier, was extraordinary. His enthusiasm was great too; I remember, for instance, his pleasure at seeing newly-arrived Guira Cuckoos from Paraguay, his gratification on picking out a Blue-bearded Jay from a group of Pileated Jays, and his expression of praise for our Head Keeper when Occipital Blue Pies were reared this year.

One of the last discussions I had with him concerned Steamer Ducks. He was too unwell to rise from his sofa to consult the large lexicon in his study and I went for him to obtain knowledge of some Greek derivatives. His interest in all such matters was sustained to the end.

Herbert Whitley was a kind and sincere man. His methods, like his opinions, were forthright. His ideas on the governing of zoos were sound, and if the standards he set are followed to-day zoo science will progress in the right direction.

KENNETH SMITH.

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Wreathed high with a glorious canopy of red, golden, and yellow autumn flowers, Herbert Whitley was laid to rest in that beautiful old-world churchyard of Buckland on the Moor, near Ashburton, Devon ; looming in the rear was Buckland Beacon, alive with bird life on a glorious autumn day.

The church of St. Peter was full to overflowing with people from all walks of life, doctors and the ordinary farm-worker had all come to pay their last respects to one of England's real old country gentlemen. To me fell the honour of being organist for part of that simple but impressive service.

Herbert Whitley will be for ever remembered for his love of all living creatures, his knowledge and understanding of aviculture in particular.

C. H. TERVISICK.

### IN MEMORIAM—ALFRED EZRA

My first meeting with the late Alfred Ezra was on a Sunday afternoon in July of the "Amazing Summer" (1940), and a more peaceful afternoon could hardly be imagined in those troubled times. He showed me every item of his then truly magnificent collection and in the evening we talked for a very long time. My outstanding recollections of the collection in those days were the great variety of softbills, the yellow Indian Ringneck, and blue Alexandrine Parrakeets, neither of which I had seen before ; the cranes, ducks, pheasants, and Guinea Fowl, all in delightful surroundings. Other exhibits in the collection at that time were Guilding's Amazons and New Guinea Green-winged King Parrots.

I visited Foxwarren Park again later that year in Mr. Seth-Smith's company and again had a delightful day, but it was not till September, 1953, that I was able to pay a further visit. I found Mr. Ezra then very old and very crippled but very alert mentally and as eager as ever to talk about birds. The collection was then only a shadow of what I had known it thirteen years before, due largely to the owner's failing health, but I was delighted to find the New Guinea King Parrots still there and breeding, and that some of the cranes were still breeding as well. Another interesting exhibit was a pair of almost pheasant-like Ground Pigeons (*Otidiphaps*) from New Guinea, with a tail-flicking action reminiscent of a Rail. Mr. Ezra was a charming host ; avicultural visitors were always welcome and I remember that the late Dr. W. Hamilton of Adelaide spent much time at Mr. Ezra's home in the early 1930's and frequently mentioned his wonderful hospitality to me.

He was, perhaps, the last of a generation able to indulge in aviculture on the grand scale ; I fear we shall not see his like again.

ALAN LONDON, North Adelaide, Australia.



## LONDON ZOO NOTES

By J. J. YEALLAND

Of the birds received during September and October, three are species new to the collection. These are two males of the Jamaican Long-tailed Humming Bird (*Trochilus polytmus*), received in exchange; a Grauer's Sunbird (*Cinnyris chalybeus graueri*), purchased, and a Daurian Redstart (*Phœnicurus auroreus*), presented by Squadron-Leader K. C. Searle, who also donated two Nicobar Parrakeets (*Psittacula longicauda nicobarica*); two Long-tailed or Malaccan Parrakeets (*P. longicauda*); a Blue-rumped Parrot and a Japanese Red-sided Titmouse (*Parus varius*).

The Long-tailed, or Streamer-tailed Humming Bird, is common on Jamaica where it is known as the "Doctor". It is one of the larger humming birds and one of the most beautiful. The crown and nape are of a velvety black; the front is bright metallic green with the wings and back a more golden-green. The flights and tail are black and the bill is coral-red with a black tip. The feathers of the hinder part of the head are long, resulting in a tousled occipital crest, and the two tail feathers from which the bird gets its name are some seven inches in length.

Grauer's Sunbird is a sub-species of the Lesser Double-collared and inhabits the mountainous regions of eastern Congo and south-western Uganda. The Daurian Redstart breeds in eastern Asia and winters in south-eastern China, Indo-China, and Formosa.

It must be many years since Nicobar Parrakeets (also known as Red-cheeked Parrakeets) were previously imported. This bird is confined to the Nicobar Islands and is obviously a near relative of the Long-tailed, but has not the striking beauty of the latter, which is perhaps the prettiest of all parrakeets.

The Red-sided Titmouse is sometimes trained by the Japanese to pull up a small wooden bucket attached to a string. The bird is kept in a specially made cage having a balcony where the performance takes place. Some tit-bit is, of course, put into the bucket as a prize and in order to get the reward the bird must make several pulls, holding down the string with its foot to prevent the bucket slipping back. Bucket-bird is another name for these talented performers.

A bird that has never before been in the collection is the Grey Phalarope (*Phalaropus fulicarius*). A specimen was found in the hold of a ship in the London docks, but it was in a weak state and lived for only a few hours after arrival at the Bird House.

Other interesting presentations are a Lesser Orange-breasted Green Pigeon (*Treron bicinctus*) given, together with a Southern Hill Mynah, by Mr. J. Frodsham, and a Blue-crowned Hanging Parrakeet (*Loriculus galgulus*) given by Mrs. Denny. A pair of Tui Parrakeets (*Brotogeris st.*



*thomae*) have also been presented. A pair of Scaup have been received in exchange and two Cockatiels; four Ceylon Jungle Fowl, two Sonnerat's Jungle Fowl and a White-crested Kalij have been bred in the Gardens, the Jungle Fowl being reared by the parents. One Brush Turkey chick emerged from the mound of leaves at the end of September, but owing perhaps to the lateness of the hatching it lived only about a month.

The Gallinule chick is now fully grown and is very greenish on the back, so looks more than ever like a hybrid between Green-backed and Grey-headed.

The pair of Crested Screamers nested on the roof of a shelter in the Great Aviary, but did not hatch any chicks.

The Great Indian Hornbill that has been in the Gardens since 1923 died recently.

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### COUNCIL MEETING

A Council Meeting was held on 9th November, 1955, in the Council Room, Zoological Society of London.

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#### OFFICERS FOR 1956

There were the following retirements and appointments :—

Assistant Secretary : Miss K. Bonner retired according to rule, and being eligible was re-elected.

Council : Mr. G. S. Mottershead, Mr. C. S. Webb, and Mr. J. J. Yealland retired by seniority : Mr. T. R. Holmes Watkins resigned.

Mr. G. T. Iles, Mr. F. Mosford, Sir Crawford McCullagh, Bart., and Mr. R. S. de Q. Quincey were elected to fill the vacancies.

Executive Committee : Mr. E. J. Boosey was elected to fill the vacancy caused by the death of Mr. A. Ezra.

Elected Hon. Fellow : Sir Edward Hallstrom.

Elected Hon. Life Member : Mr. G. M. Beresford-Webb and M. Willy Friling.

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#### SOCIETY'S MEDAL

The Society's Medal was awarded to :—

Dr. S. B. Kendall, for breeding the Citron-crested Cockatoo (*Kakatoe sulphurea citrino-cristata*).

Mr. C. M. Payne, for breeding the Oregon Towhee (*Pipilo maculatus oregonus*).

Mr. A. A. Prestwich, for breeding the Yellow-cheeked Conure (*Aratinga pertinax chrysophrys*).

ARTHUR A. PRESTWICH.

*Hon. Secretary.*



## BRITISH AVICULTURISTS' CLUB

The forty-ninth meeting of the Club was held at the Rembrandt Hotel, Thurloe Place, South Kensington, S.W. 7, on Wednesday, 9th November, 1955, following a dinner at 7.30 p.m.

Chairman : Dr. E. Hindle.

Members of the Club : Miss P. Barclay-Smith, P. C. Bath, Hylton Blythe, Miss K. Bonner, Mrs. V. M. Bourne, Captain A. Clarence, G. T. Clark, Mrs. G. T. Clark, Major C. N. Clayden, W. D. Cummings, A. H. D'Aeth, Mrs. I. Darnton, J. O. D'eath, W. T. Dring, Mrs. W. T. Dring, O. E. Dunmore, Sqd.-Ldr. C. Everitt, Mrs. C. Everitt, Miss S. A. Fothergill, J. C. Garratt, Miss D. Gask, A. G. Glenister, F. Grant, H. J. Harman, M. Scott Henderson, Miss S. I. Hobday, G. T. Iles, H. J. Indge, Terry Jones, Dr. R. S. Kirk, Miss E. M. Knobel, Miss M. H. Knobel-Harman, P. H. Maxwell, G. S. Mottershead, H. Murray, S. Murray, K. A. Norris, A. A. Prestwich, J. H. Reay, D. M. Reid-Henry, D. H. S. Risdon, R. C. J. Sawyer, D. Seth-Smith, K. J. Smith, H. A. Snazle, Miss I. Stoney, P. Sutton, Mrs. P. V. Upton, E. N. T. Vane, N. S. Walker, C. H. Wastell, H. Wilmot, J. J. Yealland.

Guests : J. Bailey, Professor J. Berlioz, Miss A. Blythe, Mrs. Hylton Blythe, Miss D. Clarence, S. A. Croucher, Mrs. S. A. Croucher, R. E. Darnton, Mrs. S. Demel, Mrs. O. E. Dunmore, Miss H. Gentry, Mrs. G. E. Glass, Mrs. A. G. Glenister, Miss E. Glenister, Mrs. F. Grant, Miss J. Jones, W. C. Hall, E. R. W. Lincoln, The Rev. J. R. Lowe, H. M. Luther, Miss M. Mottershead, Mrs. S. Murray, C. M. Payne, Mrs. C. M. Payne, Mrs. J. H. Reay, Mrs. D. M. Reid-Henry, Mrs. D. Seth-Smith, Miss E. Stoney, Mrs. P. Sutton, R. A. Taylor, Mrs. C. H. Wastell, Mrs. H. Wilmot, Miss J. Worton, A. N. Other.

Members of the Club, 54 ; guests, 34 ; total, 88.

There was also a number of visitors, including Sir Philip and Lady Manson-Bahr and W. J. C. Frost, to see the films.

After the Loyal Toast the Chairman said he would like specially to welcome Mrs. G. E. Glass, from South Africa, and Professor Jacques Berlioz, of the Paris Museum of Natural History.

In introducing Mrs. Darnton and her husband the Chairman said that Mrs. Darnton was perhaps best known to members of the Club as an aviculturist. She had in the past bred some very good birds, notably Layard's Parrakeet, for which she had been awarded the Society's Medal. She was now rapidly gaining an enviable reputation as a wild life photographer, and her articles in the *Illustrated London News* were important contributions. Mr. Darnton could perhaps be best described as the technician of the partnership.

Mrs. Darnton then showed her latest coloured film "From Hippos to Sunbirds", of which she has written the following synopsis :

" This film was taken on a 1,500 mile safari in Uganda last March



and April. We first visited the Queen Elizabeth Park where we took various pictures of elephants, hippos, buffalos, waterbuck, and a lovely chestnut-coloured Uganda Kob.

The Safari Lodge where we stayed, perched on an eminence between the Kazinga Channel and Lake Edward, is most picturesque, the cottages being built of palm logs, thatched with papyrus.

The Lake has several promontories where one can observe great companies of birds—Pelicans, White-backed Storks, Sacred and Wood Ibis, Egyptian Geese, etc., together with many small waders, while perched aloft on the tall finger-like branches of the Euphorbias, majestic Fish-Eagles survey the scene.

Moving on to Fort Portal on the foothills of Ruwenzori, we were fortunate in being able to find and photograph, in the Mwamba Valley, a tribe of pygmies dancing to the accompaniment of pipes and drums in a clearing of the forest. These primitive people live entirely on the produce of the Equatorial forest, such as wild roots, berries etc., which they collect as they move along, for they have no settled villages, but merely erect a few palm fronds or branches to form rough shelters wherever they happen to be. Their vegetarian diet is sometimes varied by any small animals that they can drive into their nets which they stretch between the trees. Occasionally they stalk, and manage to kill an elephant, shooting at the animal's feet with their minute bows and tiny arrows tipped with poison. When eventually the huge beast succumbs the whole tribe gorge for many days on the mountainous corpse—burrowing their way into the carcass—the entrails being a particular delicacy! The Murchison Falls were our next objective, and here we lived in a tent on an escarpment overlooking the Victoria Nile. It was just below the lip of this escarpment that I was lucky enough to find a new race of the Swallow-tailed Bee-eater together with their nest, and after waiting by the camera for nearly 3 hours—in the boiling sun!—I managed to get a close-up of one of the parent birds, with a beakful of insects, going into the nest hole.

From the camp to the Falls the banks of the river are the haunt of huge crocodiles, and in the heat of the day many herds of elephant come down to drink. Hippos too are much in evidence, while many waders and other water birds can be seen, also a small island where the trees are laden with nesting Sacred Ibis. The last part of the film is devoted to birds; Red-shouldered Cuckoo-Shrikes, Ross's Touracous, Broad-billed Rollers, Hornbills, Double-toothed Barbets, several species of Sunbirds, Crowned Cranes, and the gorgeous Red-breasted Shrike.

On 28th November we fly once more to Africa, where we plan to visit the Belgian Congo, Uganda, Kenya, and Tanganyika armed with two cine cameras, a 'Paillard Bolex' and a new and very fine 'Arriflex.' both complete with a battery of lenses—and backed by the spirit of adventure and boundless enthusiasm."



Everyone present must have been in complete agreement that this was one of the very best films the Club has had the pleasure of seeing, and the Chairman surely expressed the opinion of all when he said it was of a very high standard indeed. Judging by the sustained applause the audience fully appreciated the "camera craft" of Mr. and Mrs. Darnton.

Mr. Vane said he would like to compliment the photographers. He knew only too well the trials and tribulations experienced by the would-be nature photographer. In the taking of this film many difficulties had been encountered and successfully overcome and he thought the result was really outstanding.

The next meeting of the Club is on **11th January, 1956.**

ARTHUR A. PRESTWICH,  
*Hon. Secretary.*

\* \* \*

## NEWS AND VIEWS

Several members have inquired the total of the Duke of Bedford Memorial Fund. The Hon. Treasurer, R. C. J. Sawyer, informs us that the final amount was £523 2s. 10d.

\* \* \*

W. Langberg, Copenhagen, reports: "I have bred one young Crimson-winged Parrakeet, five Stanleys, and four Bourkes. The blue Masked Lovebirds reared eight this year. My four pairs of Painted Quail have reared fifty chicks."

\* \* \*

During the last ten or fifteen years the stocks of Mandarin Ducks in this country have steadily diminished. But the position has been greatly improved during the past season by the fact that Frank Mosford has successfully reared about seventy.

\* \* \*

Dr. S. B. Kendall reports that one young Timor Cockatoo (*Kakatoe sulphurea parvula*) has now left the nest, with a second yet to emerge. This, following so closely on his successful breeding of the Citron-crested Cockatoo, completes a very remarkable "double".

\* \* \*

C. A. Pilling, of Seattle, Washington, has, by the exercise of much patience, succeeded in force-feeding six young Hooded Mergansers. A female in his possession laid ten eggs; these were set under three bantams and nine hatched. There were three casualties during the rearing, and the survivors are now over ten weeks old.

\* \* \*

Mrs. T. Lloyd, of Bannockburn, has enjoyed a unique experience in that a pair of Fire Finches has successfully hatched and reared a Paradise Whydah in her mixed aviary. In all the hen Whydah laid



ten eggs, several at intervals in the Fire Finches' nests, four proved fertile, two hatched, and one young one was fully reared.

\* \* \*

Field ornithologists in England have been very excited by the fact that three pairs of Bee-eaters (*Merops apiaster*) have nested in a quarry in East Sussex. Two pairs were successful and seven young ones left the nests early in September. These are the first full breedings recorded in Great Britain so the excitement is very understandable.

\* \* \*

In 1954 a pair of Superb Glossy Starlings in the Dunfermline Public Aviary reared a young one that is still flourishing. This year they again nested, laying and hatching three eggs; one young one soon died but the other two were fully reared. A second nest produced two young, one died at fourteen days, but the other was successfully reared.

\* \* \*

A correspondent says that smugglers seem to be bringing plenty of birds into the U.S.A. in spite of controls and preventive measures by the authorities. The following are offered at the moment: Salmon-crested and Leadbeater's Cockatoos, \$500 each; Sulphur-crested Cockatoos, \$250; African Greys, \$200; Macaws, \$100 to \$200; Caiques, \$100; and a short time ago Hyacinthine Macaws, \$1,100 each.

\* \* \*

On 9th May, 1955, four young Crowned Wood Partridges (*Rollulus roulroul*) were hatched at the Wassenaar Zoo. Two were fully reared, which they believed to be the first bred in Europe. This, however, is not the case. The late Herbert Whitley had two reared of four hatched at Paignton in 1926. There is a coloured plate and a full account of the event in the October, 1927, number of the Magazine. This bird has also recently been bred in the Rotterdam Zoo "Blijdorp".

\* \* \*

Miss Vicki Batterson Young, of Portland, Oregon, has succeeded in hand-rearing the Willow Ptarmigan. Twelve eggs were at her disposal, being some brought from Alaska by her brother Wesley Batterson. All twelve hatched, but the hen the chicks were placed with killed two and crippled two others. A red heat lamp bulb was then used. After a month four died, but the surviving four are now half-grown and doing well.

\* \* \*

Near-successes: E. J. Boosey, Yellow-headed Marsh-Bird (*Agelaius icterocephalus*) one young one left the nest but it did not live to be independent of its parents. G. Jobling, Leicester, Senegal Parrot, a single young one was hatched in a cage in a bird-room; unfortunately it was killed by the male parent just as it had started to feather.



Squadron-Leader C. Everitt, Pigmy Cardinal, died after leaving the nest.

\* \* \*

Further breeding reports : G. Cooke, Leicester, Striped or Forest Canary (*Serinus scotops scotops*) first nest, four eggs, four hatched, three reared ; second nest, four young about five days old thriving. Dr. S. B. Kendall, Chertsey, Alario Finch (*Alario alario*), one reared. K. S. Harrap, Striated Finch (*Munia striata*) × Bengalese (*M. striata* var.), four young hatched and reared in a breeding cage. Squadron-Leader C. Everitt, fourteen Chinese Painted Quail bred. J. S. Rigge, two Pennant's. E. N. T. Vane, Canary-winged Parrakeet, six young left the nest but one died, possibly through exposure, having remained out over-night entangled in some nettles. E. Morris, Manchurian Crane, one young one reared. The male parent arrived in this country from China in 1903 ; the female was a home-bred bird. V. J. Lucas, Golden-mantled and Mealy Rosellas, Stanleys, Rock Peblers, Barraband's, Elegants, and Lovebirds. Splendids laid two clutches but both proved infertile. T. F. Nixon, White-eared Conure, seven eggs, six hatched, two chicks disappeared and four strong young ones were fully reared. P. C. Bath, Blue and Yellow Macaw, the two young ones have now left the nest.

\* \* \*

Round the Zoos.—Belle Vue (Manchester)—arrivals, 4 Rosy Flamingos, 6 Black-necked Crowned Cranes, 1 Naked-throated Bell Bird, and about 40 ornamental ducks.

Chester—arrivals, 6 Black-necked Crowned Cranes.

Dudley—the Yellow-backed Lories hatched a young one, but it disappeared after about five days.

Paignton—reared, 3 Occipital Blue Pies, 3 Red-vented Bulbuls, and some Pekin Robins. The Condors sat ten days over the incubation period but the egg proved infertile. New arrivals, a Black Pie, a Blue-bearded Jay, and a pair of Abyssinian Ground Hornbills.

Antwerp—arrivals, Monkey-eating Eagles and a Black-crested Eagle.

Basel—hatched, 2 Black-footed Penguins, 2 Sarus Cranes, 2 Snow Geese, and 9 Emus.

Munich—4 young *Cereopsis* Geese have been reared.

Wassenaar—the Tawny Frogmouths hatched a young one but it died within a few days.

Zurich—arrivals, 2 Black-footed Penguins and a pair of Quetzals.

Chicago—arrivals, Egyptian or Black-backed Plover (*Pluvianus aegyptius*), the so-called Crocodile Bird.

San Diego—arrivals, 2 young Two-wattled Cassowaries (*Casuarus bicarunculatus*), 1 female Beccari's Cassowary (*C.c. beccarii*), and 3 Undulated Hornbills (*Rhyticeros undulatus*).

A. A. P.



## REVIEW

BIRDS OF BRITAIN CALENDAR FOR 1956. Country Life, Ltd., London. Price 5s.

This calendar maintains the high standard always expected of Country Life publications. It contains an illustration of a bird for each month of the year, and a cover picture, from photographs by Eric Hosking. These include a great variety of species of British birds ranging from the Golden Eagle to the Crested Tit. Each illustration is accompanied by a short descriptive text.

P. B-S.

## CORRESPONDENCE

## A REQUEST FOR ARTICLES ON SOFTBILLS

May I take this opportunity of making a suggestion? The articles in your MAGAZINE are very interesting, particularly to members who specialize in the rare foreigners.

Here in Ireland, however, being unable to import Ornamental Pheasants, Parrots, Lovebirds, etc., we are forced to confine ourselves to the more common type of bird. Of these, our pet shops mainly concentrate on seedeaters, as I meet many fanciers here who fear they would be unable to keep the softbill foreigners owing to the difficulty of feeding them.

On this account I personally, and I believe most of those here who are becoming interested in Foreign birds, would welcome articles on the more common type of hardbill and softbill. I am sure that some of your experts could supply an article which would be very interesting to us in Ireland. I would like to see an article on soft food (ingredients and preparing of), and on birds such as Shama, Pekin Robin, Spreo and Glossy Starlings, Quail, Mynahs for talking, etc.

I know that you recently had an article on Starlings, and that *Cage Birds* publish articles similar to the above, but would you not think that notes something on the line of the above would have a greater appeal to the number of beginners who are interested in the hobby? Considering that you have the "experts" among your numbers, and so could get some of them to supply articles, I believe that an article on Tanagers, Fruitsuckers, and the above-mentioned foreigners would be worth considering, and I put it forward as a subject for your consideration.

THE PHARMACY,  
4 PEARSE STREET,  
ATHLONE, IRELAND.

J. P. NEWELL.

[I entirely endorse the sentiments expressed in the above letter. The Hon. Secretary and I have been ceaseless in our efforts to secure articles on softbills but with disappointingly little response.—ED.]

## MARKED WHITE ZEBRA FINCHES

With regard to Marked or Chestnut-flanked White Zebra Finches, Mr. Whitehouse has apologized for saying that our birds must be of very poor quality, but that he persists in his totally unwarranted assumption that they are inferior specimens is evident from the hope he expresses that I shall soon be able to see some really good ones.

Although I have no desire to prolong this correspondence, I really must protest at the utter unfairness of Mr. Whitehouse casting aspersions upon the quality of our birds, when he has never even seen them.

As to the naming of this variety, which he claims to have originated, he owns that the Australian name of Marked White Zebra Finch is not a good one, but completely ignores the obvious solution I suggested in my last letter—i.e. that he should find a really suitable name for them himself.

EDWARD J. BOOSEY.

BRAMBLETYE,  
KESTON, KENT.



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## LIST OF EXCHANGES AND PRESENTATIONS

Members are reminded that the publications presented or received in exchange are deposited in the Library of the Zoological Society of London, Regent's Park, London, N.W. 1.

Great Britain	. .	<i>Bird Study, British Birds, Cage Birds, The Ibis, Our Zoo News.</i>
Australia	. .	<i>Australian Aviculture.</i>
Belgium	. .	<i>Le Gerfaut, Natuurwereld, Ornithologie, Zoo.</i>
Denmark	. .	<i>Dansk Ornithologisk Forenings, Tidskrift, Stuekultur.</i>
France	. .	<i>L'Oiseau, La Terre et la Vie.</i>
Germany	. .	<i>Die Gefiederte Welt, Die Vogelwatre, Die Vogelwelt, Ornithologische Abhandlungen, Ornithologische Berichte, Ornithologische Mitteilungen.</i>
India	. .	<i>The Indian Aviculturist.</i>
Italy	. .	<i>Lo Sport Colombofilo Napoletano.</i>
Netherlands	. .	<i>Ardea, Onze Vogels.</i>
South Africa	. .	<i>The Bokmakierie, The Ostrich, S.A. Feathered World.</i>
Sweden	. .	<i>Vår Fågelvärld.</i>
Switzerland	. .	<i>Der Ornithologische Beobachter.</i>
U.S.A.	. .	<i>America's First Zoo, Animal Kingdom, The Auk, The Condor, The Pheasant Fanciers', Gamebreeders' and Aviculturist's Gazette, The Wilson Bulletin, Zoologica.</i>







## CANDIDATES FOR ELECTION

- J. A. W. BARTROP, 65 Ulverston Road, Walthamstow, E. 17. Proposed by H. J. Darman.
- E. F. GILMOUR, A.M.A., M.S.B.E., Director, Doncaster Museum and Art Gallery, Waterdale, Doncaster. Proposed by Miss K. Bonner.
- H. B. HUEBNER, Route 4, Box 420, Niles, Michigan, U.S.A. Proposed by Calvin D. Wilson.
- J. JEFFERY, Waterhayne, Yarcombe, Honiton, Devon. Proposed by A. A. Prestwich.
- D. S. REDMAN, Bleak Hall, Biggleswade, Beds. Proposed by W. B. Frostick.
- P. L. WAYRE, Reynolds Farm, Great Witchingham, Norwich. Proposed by J. J. Yealland.
- D. YOUNG, M.R.C.V.S., Beech Cottage, East Shaw Lane, Midhurst, Sussex. Proposed by E. N. T. Vane.

## NEW MEMBERS

The thirteen Candidates for Election in the September-October, 1955, number of the AVICULTURE MAGAZINE, were duly elected members of the Society.

## CHANGES OF ADDRESS

- Mrs. G. E. GLASS, to c/o Mrs. W. G. Hay, P.O. Hilton Road, Natal, South Africa.
- P. J. GLOVER, to The Old Clergy House, Cornwood, S. Devon.
- K. W. GREENWAY, to "High Bank", Heath Road, Bladon, Oxford.
- N. HOSKINS, to The Cottage, Park Road East, Uxbridge, Middlesex.
- C. J. KNÖS, to Fish and Wildlife, Kenai, Alaska, U.S.A.
- M. C. LANCASTER, to 76 Westwood Road, Bemerton Heath, Salisbury.
- Miss A. REED, to 38 Huntley Street, Toronto, Ontario, Canada.
- STANLEY SMITH, to 79 Anson Road, Singapore 2.
- E. R. SOAR, to 233 Long Lane, Hillingdon, Middlesex.
- J. M. SPENCE, to c/o P. E. Museum and Snake Park, 28 Bird Street, Port Elizabeth, S. Africa.
- A. F. C. A. van HEYST, to No. 12 Plesmanlaan, Bussum, Holland.

## CHANGE OF STYLE

- Major C. N. CLAYDEN, The Middlesex Regt., Inglis Barracks, Mill Hill, N.W. 7.

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## MEMBERS' ADVERTISEMENTS

*The charge for Members' advertisements is ONE PENNY PER WORD. Payment must accompany the advertisement, which must be sent on or before the 15th of the month to A. A. PRESTWICH, 61 CHASE ROAD, OAKWOOD, N. 14. All members of the Society are entitled to use this column, but the Council reserves the right to refuse any advertisements they consider unsuitable.*

### WANTED

Wanted very urgently for breeding purposes a guaranteed female Barraband's Parrakeet.—Colonel H. B. FINCH, Revesby, Hutton Road, Ash Vale, nr. Aldershot. Tel : Ash Vale 2252.

### EXCHANGE

Wanted to exchange 1954 Bourke's and Elegant Parrakeets cocks for cocks or hens for hens.—R. E. ROBINSON, Field House, Blackborough Road, Reigate.

### FOR SALE OR EXCHANGE

1955 Lovebirds from outdoor aviary : Masked, £4 each ; Masked-Fischer's hybrids, £3 ; Peach-face, £6. Will consider exchange for Abyssinian or Red-face.—K. E. L. SIMMONS, Lamorna, Beechwood Avenue, Tilehurst, Reading, Berks.





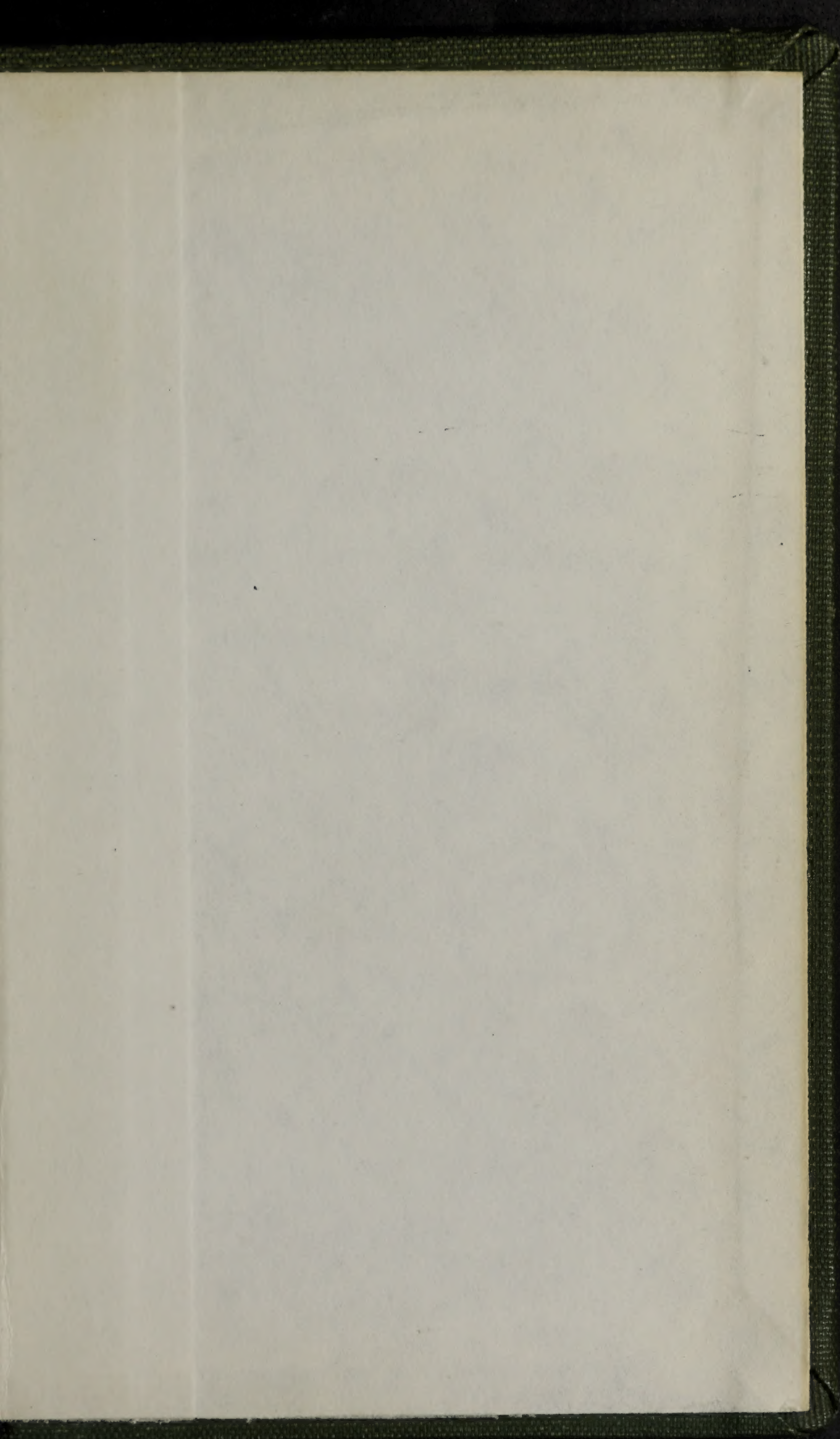














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